Overview
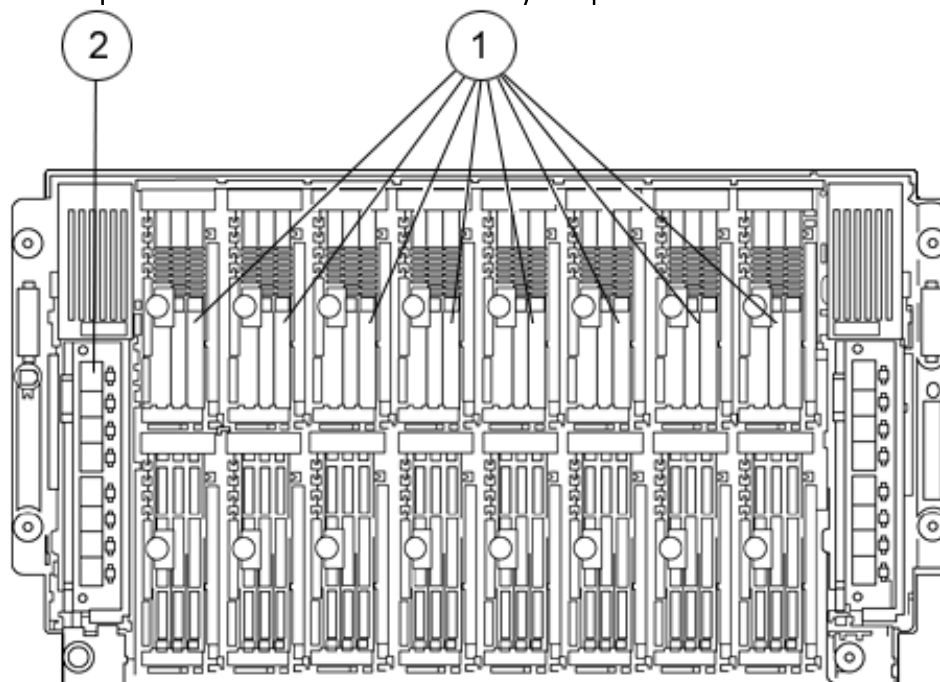
HP ProLiant BL30p Server Blades Installed in HP BladeSystem p-Class Enhanced Server Blade Enclosure

1. HP ProLiant BL30p Server Blades (16)
2. ProLiant BL p-Class interconnects (2) (patch panel 2 shown)

What's New
- Emulex based Dual port Fibre Channel HBA
- HP McDATA 4 Gb SAN Switch for HP p-Class BladeSystem
- Brocade 4Gb SAN Switch for HP p-Class BladeSystem

At A Glance
- Maximum density HP ProLiant BL30p server blade
  - High density, dual-processor capable server blade for the ProLiant BL p-Class
  - Up to two Intel Xeon 3.2-GHz/533-MHz with 2MB L3 cache processors
  - ServerWorks GC-LE chipset
  - 1024-MB PC2100-MHz Registered ECC DDR memory (1 x 1-GB), expandable to 4-GB, flex memory supports interleaved and non-interleaved memory configurations
  - Integrated Lights-Out (iLO) Advanced Pack with new static IP bay configuration and HP BladeSystem wizard features
  - Two (2) NC7781 PCI-X Gigabit NICs (embedded)
  - One 10/100T NIC (embedded) dedicated to iLO management
  - Supports up to two optional small form factor ATA 60-GB hard drives
  - BIOS-Enhanced RAID for Linux enables both primary and secondary hard drives to be bootable
  - Dual-Port Fibre Channel Adapter (2-Gb) option for SAN connectivity
  - HP ProLiant BL30p server blade plugs vertically into blade sleeve and sleeve plugs into 6U blade enclosure
  - Local I/O cable provides two USB ports, one video port, one iLO port and serial port
  - Integrated Access Tool for blade management and enhanced server blade documentation including Best Practices and Common Procedures guides
  - Up to 96 HP ProLiant BL30p server blades fit in 42U rack in non-redundant power configuration; up to 80 HP ProLiant BL30p server blades fit in 42U in full power redundant configuration

Overview

- **HP BladeSystem p-Class Enhanced Server Blade Enclosures**
  - Blade iLO signals are physically consolidated to an RJ-45 port on the server blade management module
  - Option kit available for field upgrade of backplanes to existing, deployed blade enclosures
  - Each server blade enclosure is 6U and holds up to 16 HP ProLiant BL30p server blades (HP BladeSystem p-class blade sleeve is required for each pair of HP ProLiant BL30p server blades installed)
  - Types of interconnects available: GbE Interconnect Switches, GbE2 and CGESM Interconnect Switches with optional Fibre Channel pass through, Patch Panels or Patch Panel 2 with Fibre Channel pass through
- **HP BladeSystem p-Class Power Enclosures**
  - HP BladeSystem p-Class rack-centralized power enclosure holds hot-plug power supplies
  - Choose the HP BladeSystem p-Class 3U power enclosure or the HP BladeSystem p-Class 1U power enclosure
  - Use BL p-Class sizing tool to determine power and cooling requirements based on your desired configuration: http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls
  - 3 phase power enclosure highly recommended for BL30p deployments
  - HP BladeSystem p-Class power enclosures with power supplies not needed if using facility -48VDC ± 10% (Facility DC option kit required)
- **HP BladeSystem p-Class Power Distribution (only required with the 3U power enclosure)**
  - Carries power from the power enclosure(s) to the server blade enclosures
  - Three power distribution choices:
    - mini bus bars (support up to 3 blade enclosures)
    - scalable bus bars (support up to 5 blade enclosures)
    - power bus box (supports a single blade enclosure)

  - New dual power input option kit allows support for two power enclosures on mini bus bars
- Server blade enclosures, interconnects and power enclosures protected by a limited three year warranty with optional service uplifts available.
- HP ProLiant BL30p Server Blade Limited Warranty includes 3 year Parts, 1 year Labor, 1-year on-site support.
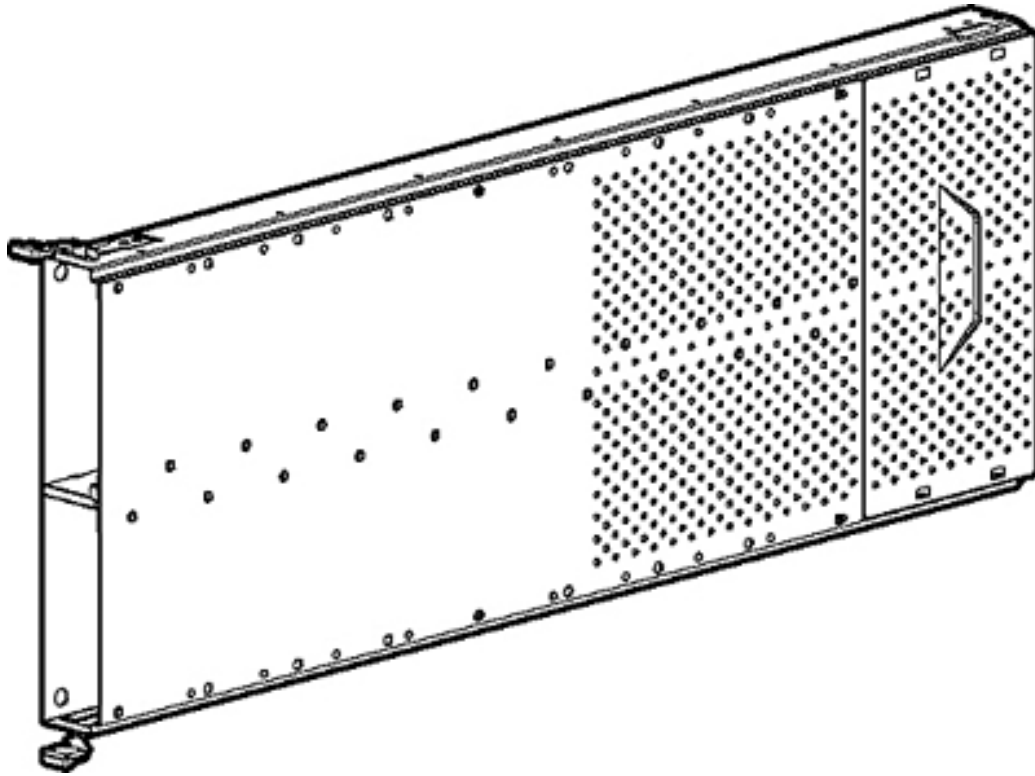
NOTE: All ATA hard drives offered by HP carry a one year warranty regardless of the base system in which they are installed.
NOTE: Power requirements for a ProLiant BL p-Class system: 200V - 240V AC, 30 amp or facility DC -48V ± 10%.
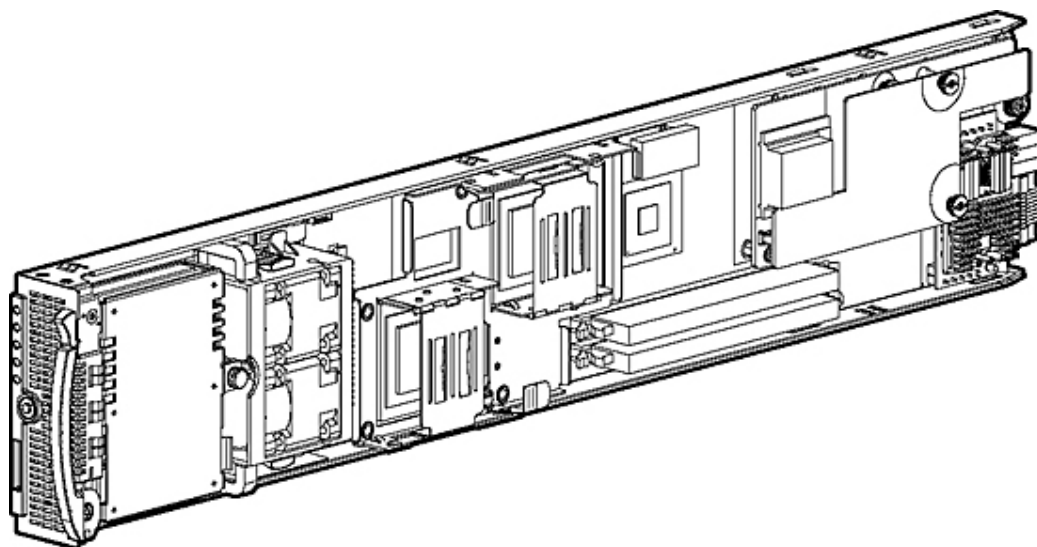
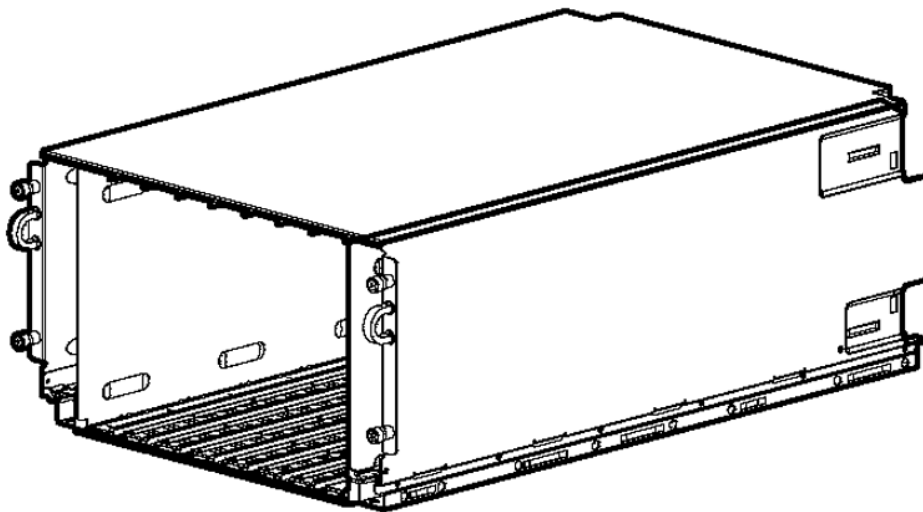HP ProLiant BL30p Server Blade
+

Overview

HP BladeSystem p-Class Blade Sleeve (holds 2 HP ProLiant BL30p server blades)

+

HP BladeSystem p-Class Enhanced Server Blade Enclosure
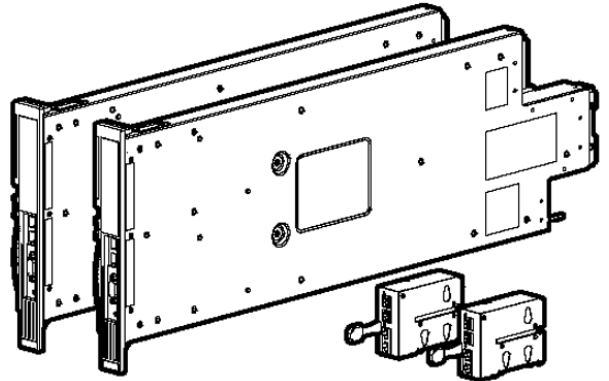
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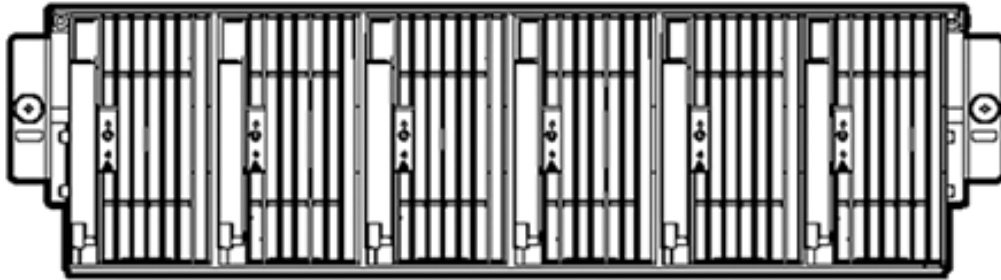
Overview

OR
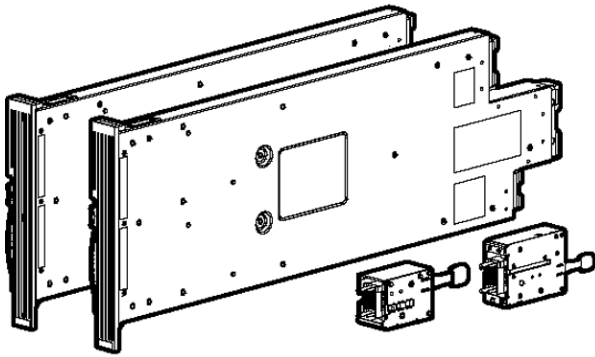
Patch Panel (shown) or
Patch Panel 2

GbE Interconnect Switch (shown) or GbE2 Interconnect Switch
or CGESM Interconnect Switch
(fiber or copper-based)

BL p-Class Interconnects

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HP BladeSystem p-Class 3U power enclosure(s) and power supplies (three phase recommended)
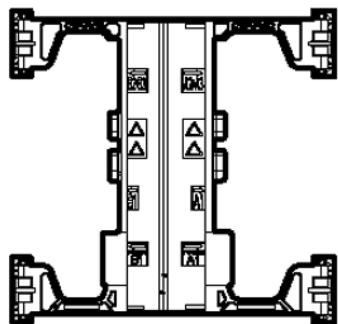
OR

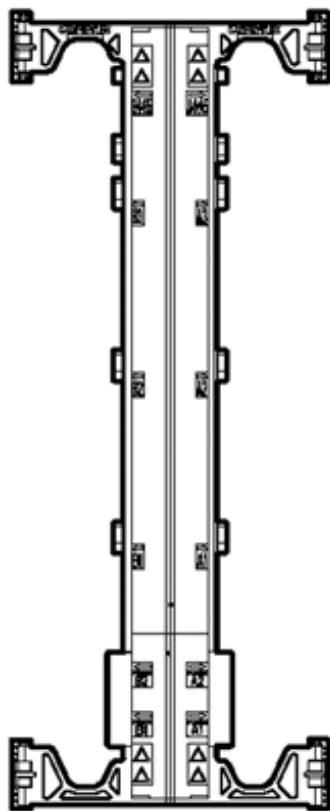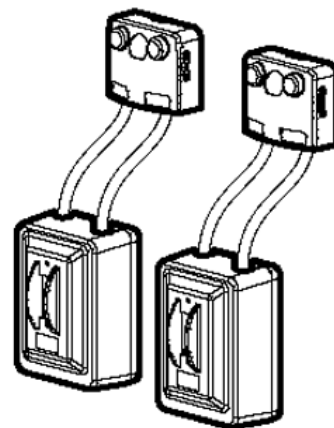HP BladeSystem p-Class 1U power enclosures and power supplies

OR
Facility DC

Overview

OR   OR

Mini bus bars

Bus boxes
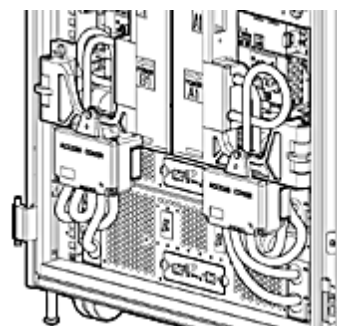
Scalable bus bars   Dual power input kit for mini bus bar option

HP BladeSystem p-Class power distribution (only required with 3U power enclosure)

Configuration Steps

- For a complete HP ProLiant BL30p server blade solution, do the following:

1. Select desired model, configuration and quantity of HP ProLiant BL30p server blades

   PLUS

2. Determine how many HP BladeSystem p-Class blade sleeves are required. Each p-Class blade sleeve holds two HP ProLiant BL30p server blades and one server blade enclosure holds up to eight sleeves.

   PLUS

3. Determine how many HP BladeSystem p-Class Enhanced Server Blade Enclosures are required. Each enhanced server blade enclosure can hold up to 16 HP ProLiant BL30p server blades.

   NOTE: HP BladeSystem p-Class enhanced server blade enclosures are required to support HP ProLiant BL30p server blades. Enhanced server blade enclosures can be purchased with licenses for Rapid Deployment Pack:
   HP BladeSystem p-Class enhanced server blade enclosure with 8 Rapid Deployment Pack licenses (281404-B22)
   Or
   HP BladeSystem p-Class enhanced server blade enclosure with Rapid Deployment Pack trial (243564-B22)
   Or
   HP BladeSystem p-Class server blade enclosure with the HP BladeSystem Management Suite which is delivered in a convenient to purchase pack that includes a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP) Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM). (380625-B22)

   PLUS

Overview

4. Select an Interconnect Kit. Each Interconnect Kit contains a pair of interconnects except the CGESM which includes a single interconnect switch. One interconnect kit is required with each server blade enclosure:
    RJ-45 Patch Panel 2 with Fibre Channel pass through. This is the required patch panel model for Fibre Channel connectivity on HP ProLiant BL30p server blade (306465-B21).
    Or
    RJ-45 Patch Panel (230766-B21)
    Or
    Quantity (2) Cisco Gigabit Switch Module for HP BladeSystem p-Class Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 2 RJ-45 10/100/1000 T/TX/T uplink ports, and 4 SFP ports) (378926-B21), with or without any combination of up to 4 10/100/1000 T/TX/T RJ-45 SFP Module (378928-B21) or 1000BASE SX Fiber SFP Module (378929-B21), with or without ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLXXp server blade Fibre Channel connectivity when using the CGESM Interconnect Switch)
    Or
    Quantity (2) Cisco Gigabit Switch Module for HP BladeSystem p-Class Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 2 RJ-45 10/100/1000 T/TX/T uplink ports, and 4 SFP ports populated with (2) 10/100/1000 T/TX/T SFP modules) (378927-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLXXp server blade Fibre Channel connectivity when using the CGESM Interconnect Switch)
    Or
    BL p-Class C-GbE2 Interconnect Kit (with 16 10/100/1000 T/TX/T downlink ports, 6 RJ-45 10/100/1000 T/TX/T uplink ports) (283192-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLXXp server blade Fibre Channel connectivity when using the GbE2 Interconnect Switch)
    Or
    BL p-Class F-GbE2 Interconnect (with 16 10/100/1000 T/TX/T downlink ports, 4 LC 1000 SX and 2 RJ-45 10/100/1000 T/TX/T uplink ports) (283193-B21), with or without optional ProLiant BL p-Class Storage Connectivity Kit (with 16 Fibre Channel connectors) (321745 -B21) (required for ProLiant BLXXp server blade Fibre Channel connectivity when using the GbE2 Interconnect Switch)

    PLUS
5. Select HP BladeSystem p-Class power enclosure(s) and power supplies based on configuration.
    NOTE: 3 phase power enclosure options are highly recommended for deployments of HP ProLiant BL30p server blades. Use the ProLiant BL p-Class sizing utility to help determine power configuration:
    http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls .
    NOTE: Power enclosures and supplies are not needed if using facility DC (-48V ± 10%).
    Single phase 3U power enclosure with four power supplies (Single-phase 3U power enclosure holds a maximum of four power supplies) (NA/JPN- 239162-001) (INTL - 239162-421)
    Or
    Three-phase 3U power enclosure with six power supplies (Three-phase 3U power enclosure holds a maximum of six power supplies) (NA/JPN- 230769-001) (INTL - 230769-421)
    (3U Power enclosures and supplies can also be purchased separately see options list)
    Or
    1U power enclosure with six power supplies (378284-B21)
    Or
    1U power enclosure with two power supplies (380314-B21)
    (Additional power supplies can also be purchased separately - see options list)

    PLUS
6. Select power distribution option (only required with 3U power enclosures):
    Mini bus bars (support up to 3 server blade enclosures) (240559-B21).
    NOTE: Two mini-bar configurations can be stacked to fill a 42U rack.
    Or
    Scalable bus bars (support up to 5 server blade enclosures*) (240560-B21)
    Or

Overview

Power Bus Box (supports a single server blade enclosure*) (240562-B21)
Or
Dual Power Input Kit for Mini Bus Bar - required for support of two power enclosures. (364565-B21)
Or
HP Modular Distribution Unit 40 Amp (NA/JPN) (P/N 252663-D75)**
Or
HP Modular Distribution Unit 40 Amp (Int'l) (P/N 252663-B34)**
Or
HP Modular Distribution Unit 32 Amp (Int'l) (P/N 252663-B33)**
Or
HP Modular Distribution Unit 24 Amp (NA/JPN) (P/N 252663-D74)**
*NOTE: Maximum depends upon power input
**NOTE: The Modular Distribution Unit Kits excludes the extension bars as they are not required with the HP BladeSystem p-class 1U power enclosure.

HP BladeSystem p-Class Enhanced Server Blade Enclosures Installed in 42U Rack
Redundant Power Configuration (left) and Non-Redundant Power Configurations (right)

1. HP BladeSystem p-Class Power Enclosure

QuickSpecs

Standard Features (Server Blade)

Processor	Intel Xeon Processor 3.2-GHz/533-MHz with 2MB L3 cache
	Intel Xeon Processor 3.2-GHz/533-MHz with 1MB L3 cache
	Intel Xeon Processor 3.06-GHz/533-MHz with 512KB L2 cache

Upgradeability	HP ProLiant BL30p Server Blade is dual-processor capable

Cache Memory One of the following depending on Model	2-MB Level 3 cache 1-MB Level 3 cache 512-KB Level 2 cache

Chipset	ServerWorks GC-LE chipset NOTE: For more information regarding the ServerWorks chipset, see the following website: http://www.serverworks.com/products/overview.html

Memory Protection	Memory interleaving when an identical pair of DIMMs is installed (P/N 287494-B21)

Memory	Type	PC2100 DDR SDRAM running at 266MHz
	Standard	1024-MB (1 x 1-GB) NOTE: non-interleaved unless a second DIMM option installed 287497-B21
	Maximum	4-GB

Network Adapter	Three (3) network adapters total: Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One 10/100T NIC (embedded) dedicated to iLO management

Integrated Manageability	Integrated Lights-Out (iLO) Management Advanced Pack with new static IP bay configuration feature iLO integrated HP BladeSystem wizard simplifies iLO, blade server and operating system installation and configuration.

Internal Storage	Hard Drives	None ship standard

Maximum Internal Storage	ATA	120-GB (2 x 60-GB small form factor ATA, 5400rpm hard drives)

Standard Features (Server Blade)

Fiber Channel on the HP ProLiant BL30p server blade	The following items are needed to connect the HP ProLiant BL30p server blade to a SAN via Fibre Channel:

1. HP ProLiant BL30p server blade with Dual-Port Fibre Channel Adapter (option) installed
   - The Dual-Port Fibre Channel Adapter option 354054-B21 is compatible with the HP ProLiant BL30p server blade (not compatible with HP ProLiant BL20p server blades series)
   - Two ports on each configured blade provide redundant Fibre Channel connections
   - Supports up to 2 Gb/s Fibre Channel equipment
   - Based on the QLogic ISP2312 chipset
   - Kit includes two small form factor pluggable transceivers with LC connectors for installation into the interconnect option kit (see 2A and 2B below)

   AND

2A. RJ-45 Patch Panel 2 (with Fibre Channel pass through) interconnect option
   - Enables pass through of both Ethernet and Fibre Channel signals
   - Ethernet signals exit the rear of the RJ-45 Patch Panel 2 interconnects
   - Fibre Channel signals exit the front of the RJ-5 Patch Panel 2 interconnects
      - 8 Fibre Channel small form factor pluggable (SPF) transceiver cages on the front of each Patch Panel 2 interconnect (16 Fibre Channel SPF transceiver cages per server blade enclosure)
      - SPF transceivers are included with the BL30p Dual-Port Fibre Channel Adapter kit (option)

   OR

2B. C-GbE2 or F-GbE2 or CGESM Interconnect Kit plus the Storage Connectivity Kit (option)
   - Enables Ethernet signal consolidation and pass through of Fibre Channel signals
   - Both Ethernet and Fibre Channel signals exit the rear of the CGESM or GbE2 Interconnect Switch (with the Storage Connectivity Kit option)
      - 8 Fibre Channel small form factor pluggable (SPF) transceiver slots on the back of each Interconnect Switch (16 Fibre Channel SPF transceiver cages per server blade enclosure)
      - SPF transceivers included with the BL30p Dual-Port Fibre Channel Adapter kit (option)

   AND

3. Compatible SAN
   - Optimized for StorageWorks arrays:
      - Modular Smart Array 1000
      - Enterprise Virtual Array 5000 (EVA5000) V2; Enterprise Virtual Array 3000 (EVA3000)
      - XP48, 128, 512, 1024;
   - Compatible with select 3rd party SANs. Refer to blade storage website for details: http://h18000.www1.hp.com/products/servers/proliant-bl/p-class/storage.html

Local I/O Cable	No PCI slots, all features integrated

Two (2) USB ports, one (1) video port, one (1) iLO port and one (1) serial port

Two (2) Local I/O cables ship with each server blade enclosure with enhanced backplane components (281404-B22 and 243564-B22)

NOTE: Tested USB devices (keyboard, mouse, floppy) are listed in options section below.

Standard Features (Server Blade Enclosure and Interconnects)

HP BladeSystem p-Class Enhanced Server Blade Enclosures and ProLiant BL p-Class Interconnects

HP BladeSystem p-Class Enhanced Server Blade Enclosure

6U (10.5-inch), 19-inch wide

Holds up to:

- Eight (8) HP ProLiant BL20p server blades series
- Sixteen (16) HP ProLiant BL30p server blades series (HP ProLiant BL30p server blade sleeves required)
- Two (2) HP ProLiant BL40p server blades series
- A combination of the above

NOTE: HP BladeSystem p-Class enhanced server blade enclosures are required to support HP ProLiant BL30p server blades. See compatibility matrix:
http://www.hp.com/go/bladesystem/enclosure/compatibility.
NOTE: Server Blade Enclosure Upgrade Kit (354100-B21) contains enhanced backplane components and enables a field upgrade of a blade enclosure to support HP ProLiant BL30p server blades series and provide a single, physical iLO port for the enclosure.

Two (2) outside bays for interconnects (Patch Panel, Patch Panel 2, GbE Interconnect Switch, GbE2, or CGESM Interconnect Switch)

Server blade management module on the rear of the server blade enclosure is hot-plug, has a centralized 10/100T iLO port for all installed blades, reports events of all installed blades and provides asset and inventory information via SNMP.

HP BladeSystem p-Class Power Requirements

Redundant 208V 30amp 3-phase 4 wire, NA
Redundant 380 - 415V 20A 3-phase 5 wire, Intl
NOTE: 3 phase power highly recommended for BL30p deployments.
Redundant 200V - 240V AC, 30 amp single-phase for NA and International
Redundant -48VDC ± 10%

ProLiant BL p-Class Interconnect Switch Option

(A pair of switches per kit)

(Each HP BladeSystem p-Class server blade enclosure requires a pair of interconnects - patch panels or interconnect switches)

Interconnect Switch interconnects consolidate the Ethernet signals from the server blades to a smaller set of external copper-based or fiber-based uplink ports for connection to the network infrastructure. Like the Patch Panel interconnects, an option is also available to pass through individual HP ProLiant BL20p G2 and HP ProLiant BL30p Fibre Channel signals. The interconnect switches provide up to a 32-to-1 server network cable reduction per server enclosure depending on the mix of HP ProLiant BL20p server blade series, HP ProLiant BL30p server blade series, and HP ProLiant BL40p server blades series. Each interconnect switch pair reduces up to sixteen internal server network (NIC) ports to one to six external ports (four on a modular rear mounting interconnect and two on the switch front panel). This provides a total of twelve external ports per server blade enclosure.
The Cisco GESM and GbE2 Interconnect Kits (C-GbE2 and F-GbE2) are for applications that require network adapter consolidation to 1000 Mbps (Gigabit Ethernet) and HP ProLiant BL30p Fibre Channel pass-through.

Standard Features (Server Blade Enclosure and Interconnects)

The Cisco Gigabit Ethernet Switch Module (CGESM) Interconnect Kit is for applications that require network adapter consolidation to 1000 Mbps (Gigabit Ethernet) in a Cisco infrastructure. The CGESM supports the same and HP ProLiant BL30p Fibre Channel pass-through as the GbE2.

- The Cisco Gigabit Ethernet Switch Module Interconnect kit includes one CGESM Interconnect Switch or one CGESM Interconnect Switch populated with two (2) RJ-45 10/100/1000 T/TX/T Small Form Factor Pluggable (SFP) Modules.
- Quantity 2 Cisco Gigabit Ethernet Switch Module Interconnect kits provide two CGESM Interconnect Switches providing any combination of up to twelve (12) RJ-45 10/100/1000 T/TX/T or Fiber SX external ports per server blade enclosure.
The optional ProLiant BL p-Class Storage Connectivity Kit (321745 -B21) is required for HP ProLiant BL30p Fibre Channel pass-through when using either the CGESM Interconnect Kit.

The GbE2 Interconnect Kits (C-GbE2 and F-GbE2) provide NIC consolidation to 1000 Mbps (Gigabit Ethernet), advanced network feature, Fibre Channel pass-through (for HP ProLiant BL20p server blade series and HP ProLiant BL30p server blades series), and 1 Gigabit Ethernet bandwidth connectivity to the network.

- The ProLiant BL p-Class F-GbE2 Interconnect Kit includes two GbE2 Interconnect Switches and two QuadSX Interconnect Modules that provide eight (8) LC 1000 SX and four (4) RJ-45 10/100/1000 T/TX/T external ports per server blade enclosure.
- The ProLiant BL p-Class C-GbE2 Interconnect Kit includes two GbE2 Interconnect Switches and two QuadT2 Interconnect Modules that provide twelve (12) RJ-45 10/100/1000 T/TX/T external ports per server blade enclosure.
- The optional ProLiant BL p-Class Storage Connectivity Kit (321745 -B21) is required for Fibre Channel pass-through when using either the C-GbE2 or F-GbE2 Interconnect Kit.

The GbE Interconnect Kits (C-GbE and F-GbE) provide NIC consolidation to 100 Mbps (Fast Ethernet).

- The ProLiant BL p-Class F-GbE Interconnect Kit includes two GbE Interconnect Switches and two DualTSX Interconnect Modules that provide four (4) LC 1000 SX and eight (8) RJ-45 10/100 T/TX external ports per server blade enclosure.
- The ProLiant BL p-Class C-GbE Interconnect Kit includes two GbE Interconnect Switches and two QuadT Interconnect Modules that provide four (4) RJ-45 10/100/1000 T/TX/T and eight (8) RJ-45 10/100 T/TX external ports per server blade enclosure.

Also included (per Interconnect Switch):
- One (1) RS-232 DB-9 front panel out-of-band management port
- Redundant crosslink ports connecting the two interconnect switches
- Redundant power inputs and on-board redundant fans
- Hot-plug and hot- remove with configuration retention and no need to cable/re-cable
- Power ON, management, and per port status and speed LED indicators
- Reset/power momentary push-button switch
- HP ProLiant BL Interconnect Switch Management Utilities and User Documentation CD
- Fully pre-configured for rapid deployment and immediate operation

The GbE Interconnect Kits (C-GbE and F-GbE) are for applications that require network adapter consolidation to 100 Mbps (Fast Ethernet).

- The ProLiant BL p-Class F-GbE Interconnect Kit includes two GbE Interconnect Switches and two DualTSX Interconnect Modules that provide four (4) LC 1000 SX and eight (8) RJ-45 10/100 T/TX external ports per server blade enclosure.
- The ProLiant BL p-Class C-GbE Interconnect Kit includes two GbE Interconnect Switches and two QuadT Interconnect Modules that provide four (4) RJ-45 10/100/1000 T/TX/T and eight (8) RJ-45 10/100 T/TX external ports per server blade enclosure.

ProLiant BL Interconnect Switch Management System and Utilities:

Standard Features (Server Blade Enclosure and Interconnects)

Full featured web-based and scriptable command line (CLI) interfaces, password protected multi-level user accounts, Telnet, SNMP, BootP client, port mirroring, port-based VLANs and VLAN tagging, EtherChannel compatible multi-port trunking, network time protocol, spanning tree protocol, broadcast/multicast storm control, flow control, human readable/writeable configuration file, TFTP client, IP address security restrictions, auto-MDI/MDIX, auto-negotiation and auto-sensing of speed and duplex mode, and more.

ProLiant BL p-Class Storage Connectivity Kit Option
(supports a pair of two CGESM or GbE2 switches)

The Storage Connectivity Kit (option) is required for Fibre Channel signal pass-through when using the CGESM or a GbE2 Interconnect Switch Kit. Both Ethernet cable consolidation and Fibre Channel connectivity is possible using a single interconnect option. Order one Storage Connectivity Kit per server blade enclosure for Fibre Channel pass through of HP ProLiant BL20p and HP ProLiant BL30p server blades series.

The Storage Connectivity Kit includes two OctalFC Interconnect Modules that provide sixteen open transceiver cages for the pluggable small form factor transceivers that come with each HP ProLiant BL30p Dual-Port Fibre Channel Adapter (option) and each HP ProLiant BL20p Dual Port Fibre Channel Adapter. The Storage Connectivity Kit supports up to eight HP ProLiant BL20p server blade series, up to sixteen HP ProLiant BL30p server blades series or combinations thereof.

ProLiant BL p-Class RJ-45 Patch Panel
(A pair of patch panels provided per kit)

(Each server blade enclosure requires a pair of interconnects - patch panels or interconnect switches)

6U (10.5-inch), plugs into HP BladeSystem p-Class server blade enclosures.

Passes through Ethernet NIC signals, from all installed server blades, individually out as RJ-45 connections.

Supports Gigabit Ethernet network adapters.

16 RJ-45 connectors on the back of each RJ-45 Patch Panel (32 RJ-45 connections per server blade enclosure).

The benefits to the RJ-45 Patch Panel are that it:
- Allows the customer to connect signals to their own LAN infrastructure components.
- Provides very economical option enabling the lowest cost blade solution.
- Is completely passive and requires no software or management.

ProLiant BL p-Class RJ-45 Patch Panel 2 (with Fibre Channel pass through)

(A pair of patch panels provided per kit)

(Each server blade enclosure requires a pair of interconnects - patch panels or interconnect switches)

NOTE: Either Patch Panel 2 or a Switch Interconnect Kit is required for SAN connectivity with HP ProLiant BL20p server blade series and HP ProLiant BL30p server blades series.

6U (10.5-inch), plugs into HP BladeSystem p-Class server blade enclosures

Passes through Ethernet NIC signals, from all installed server blades, individually out as RJ-45 connections.

Supports Gigabit Ethernet network adapters.

16 RJ-45 connectors on the back of each RJ-45 Patch Panel 2 (32 RJ-45 connections per server blade enclosure).

Passes through Fibre Channel signals, from all installed HP ProLiant BL20p and HP ProLiant BL30p server blades series, individually out through small form factor pluggable (SPF) transceiver cages.

Supports 2 Gb/s Fibre Channel signals and backward compatible with existing 1 Gb/s Fibre Channel equipment.

8 Fibre Channel small form factor pluggable (SPF) transceiver cages on the front of each Patch Panel 2 (16 Fibre Channel SPF transceiver cages per server blade enclosure).

The benefits to the RJ-45 Patch Panel 2 are that it:
- Allows the customer to connect signals to their own LAN and SAN infrastructure components.
- Provides a very economical option enabling the lowest cost blade solution.
- Is completely passive and requires no software or management.
- Electrically isolates the Ethernet and Fibre Channel signals from each other.

Standard Features (Server Blade Enclosure and Interconnects)

ProLiant BL p-Class Fibre Channel pass through	Fibre Channel signals travel from a HP ProLiant BL20p server blade series and/or HP ProLiant BL30p server blades series through the server blade enclosure backplane. Fibre Channel signals are terminated through the RJ-45 Patch Panel 2 CGESM or GbE2 Interconnect Switch (with Storage Connectivity Kit) in the interconnect bays. To provide redundancy each server blade has two Fibre Channel signals; one Fibre Channel signal terminates through the right interconnect, the other Fibre Channel signal terminates through the left interconnect.
	Eight Fibre Channel small form factor pluggable (SPF) transceiver cages exist on the front of each RJ-45 Patch Panel 2 and rear of each GbE2 Interconnect Switch (16 Fibre Channel connections per server blade enclosure). The SPF cages are used for insertion of SPF transceivers included with the HP ProLiant BL20p G2 Dual-port Fibre Channel Mezzanine Card and the HP ProLiant BL30p Dual-Port Fibre Channel Adapter.

Required Network Cabling	10Base-T	Categories 3, 4 or 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	100Base-TX	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-T	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
	1000Base-SX	50/125 μm Multimode Fiber, 400 MHz/Km (500 meters) 50/125 μm Multimode Fiber, 500 MHz/Km (550 meters) 62.5/125 μm Multimode Fiber, 160 MHz/Km (220 meters) 62.5/125 μm Multimode Fiber, 200 MHz/Km (275 meters)

NOTE: For cabling information, refer to the website at: http://www.hp.com/go/servers/.

Standard Features (Power System and Rack Information)

HP BladeSystem p-class Power System and Rack Information	**NOTE:** To determine power configuration, please refer to the HP BladeSystem p-Class Overview and Planning Whitepaper and sizing utility at http://www.hp.com/products/servers/proliant-bl/p-class/info/.

HP BladeSystem p-Class 3U Power Enclosure	3U (5.25-inch), 19-inch wide, 29-inch deep (0.48-meter wide, 0.74-meter deep), dual input single phase and three phase models available.
	HP BladeSystem p-Class 3U power enclosure provides scalable rack-centralized, hot-plug power without the need for PDUs.
	Each 3 phase power enclosure houses six hot-plug power supplies
	Each single-phase power enclosure holds four hot-plug power supplies
	Please use the sizing utility to determine the power needed for each configuration
	http://www.hp.com/go/bladesystem/powercalculator
	NOTE: 3 phase power enclosure options highly recommended for HP ProLiant BL30p server blade deployments.
	Power enclosures and power supplies are not needed if using facility DC (-48V DC ± 10%). If using facility DC, Facility DC Power Connection kit (240563-B21) is needed.

HP BladeSystem p-Class 1U Power Enclosure	1U (1.75-inch), 19-inch wide, 29-inch deep (0.48-meter wide, 0.74-meter deep), Multi-input single phase or three phase operation.
	HP BladeSystem p-Class 1U power enclosure provides external, hot-plug power. Each 1U power enclosure houses up to six hot-plug power supplies to power up to one server blade enclosure, fully populated with BL p-Class server blades and interconnects.
	Please use the sizing utility to determine the power needed for each configuration
	http://www.hp.com/go/bladesystem/powercalculator
	Power enclosures and power supplies are not needed if using facility DC (-48V DC ± 10%). If using facility DC, only Facility DC Power Connection kit part number (240563-B21) is needed.

HP BladeSystem p-Class Power Distribution (only required with 3U power enclosures)	In the HP BladeSystem p-Class infrastructure, redundant -48 VDC power (from the power enclosures or facility DC power) is carried from the power enclosures to the server blade enclosures through bus bars (for multiple enclosures) or power bus boxes (for a single enclosure). Hinges attach the HP BladeSystem bus bars to the rack rails and provide easy rear access to the blade enclosures and interconnects. Power is distributed through independent A- and B-sided bus bars.
	Three power distribution solutions are available depending on the size of the intended deployment (see table).

	Power Enclosures Supported	Server Blade Enclosures Supported	Max. Rack Space Occupied
Scalable Bus Bar	1 or 2	up to 5	36U
Mini Bus Bar	1 or 2*	up to 3	24U
Power Bus Box	1	1	9U
	NOTE*: Dual power input kit for mini bus bar option (364565-B21) required to support two power enclosures. **NOTE:** To support a full 42U rack of BL p-Class server blades, use two stacked pairs of mini bus bars.		

Standard Features (Power System and Rack Information)

Required Power Source   Two 30-Amp redundant power feeds per power enclosure
Connectors:

1. NEMA receptacles (NA/Japan)
   - NA 1-phase L6-30, 250v, 30A 3-wire
   - NA 3-phase L15-30, 250V, 30A, 4-wire
2. IEC 309 Pin & Sleeve connectors (International)
   - Intl 1-phase 250V, 32A, 3- pin (2 pole + ground)
   - Intl 3-phase 380-415V, 32A, 5--pin (4 pole + ground)
   - Optimized for power cabling from rack bottom and network cabling from rack top

For cabling information, refer to the website at: http://www.hp.com/go/servers/

Standard Features (Manageability)

ProLiant Essentials Foundation Pack Software for the ProLiant BL Server	ProLiant Essentials Rapid Deployment Pack	Rapid Deployment Pack (RDP) is an automated deployment and provisioning solution for all ProLiant servers. RDP includes the Altiris Deployment Solution and ProLiant Integration Module featuring ProLiant server pre-configured events for OS installation, and optimized software drivers, firmware and management agents. Every RDP CD includes 10-node trial licenses for evaluation purposes. RDP requires a license for each server deployed and are available for purchase with blade servers. For more information, visit http://www.hp.com/servers/rdp.
	HP Systems Insight Manger	HP Systems Insight Manager (HP SIM) help maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. HP SIM is easy to set up to work with the Insight Management Agents, integrated Light-Out and Remote Insight Light-Out Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP Systems Insight Manager customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP Systems Insight Manager visit http://www.hp.com/go/hpsim.
	Management Agents	The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management Web site at http://www.hp.com/servers/manage.
	Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice. and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
	ROMPaq, support software, and configuration utilities	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available in the RDP CD, SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at http:www.hp.com/go/support.
	Insight Diagnostics Online Edition	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials

Standard Features (Manageability)

Optional ProLiant Essentials Value Packs

Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.
- Performance Management Pack - identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.
- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions.
- Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.
- Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

SmartStart

SmartStart is a tool that simplifies single server setup, providing a rapid way to deploy reliable and consistent server configurations. To obtain a copy of SmartStart for your blade server, redeem the coupon that is included with your Blade server or order your copy from the SmartStart web site. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/smartstart.
SmartStart version supported (minimum): SmartStart 6.20

OS Support

Microsoft® Windows®
LINUX
VMware Virtualization Software

NOTE: For a more complete and up-to-date listing of supported operating systems and versions, please visit our OS Support Matrices website: http://www.hp.com/go/ossupport
NOTE: For an up-to-date listing of the latest drivers available for the ProLiant BL p-Class, please visit the support website: http://www.hp.com/products/servers/proliant-bl/p-class/info/
NOTE: For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at:
http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html

Standard Features (Manageability)

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA3000 & EVA5000, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to http://www.hp.com/go/factory-express.

Intelligent Manageability

Integrated Lights-Out (iLO) Advanced Pack

- HP BladeSystem wizard - new feature iLO, blade and OS installation and configuration
- Static IP bay configuration -- new feature for ProLiant BL p-Class blades
- Virtual Text and Graphical Remote Console
- Virtual CD-ROM and Virtual Floppy
- Virtual Power Button Control
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) Security
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privileges

NOTE: For more information on iLO Advanced visit the website: http://www.hp.com/servers/ilo/

Automatic Server Recovery-2 (ASR-2)
Redundant ROM
Remote Flash ROM
ROM Based Setup Utility (RBSU)
Advanced Configuration and Power Interface Specification Ready (ACPI)
Server and Interconnect Switch Health Logs
Redundant Power Supply Utility
Pre-Failure Warranty (covers processors, as well as hard drives and memory)
Interconnect Switch Management System and Utilities (Interconnect Switch option)
Integrated Management Log (IML)
Dynamic sector repairing and drive parameter tracking (with Smart Array controllers)
Network adapter teaming set-up utility

Standard Features (Manageability)

HP BladeSystem p-Class Availability Features

- Power redundancy:
    - hot-plug power supplies
    - redundant AC feeds (requires two power enclosures when using blade enclosures with enhanced backplane components)
    - interconnects options and server blade management module share power from both A- and B- side power buses
- Dual-Port Fibre Channel Mezzanine Card for redundant SAN connections
- Redundant ROM on each server blade
- ECC Memory
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Interconnect Switch availability features:

- Hot-plug and hot- remove with configuration retention and no need to cable/re-cable
- Two network connections per HP ProLiant BL30p server blade routed to independent interconnect switches
- Redundant Ethernet inter-switch communication with two sets of redundant Ethernet uplink ports per each interconnect switch
- Redundant front panel ports per each interconnect switch for diagnostics, management, and additional uplinks
- Redundant serial ports
- Compatibility with PVST+ (CGESM or GbE2 switch) and 802.1D Spanning tree protocol support for loop-free path redundancy
- Static IEEE 802.3ad (EtherChannel compatible) trunking with automatic port load balancing and failover
- Redundant configuration files and operating system firmware images in memory (GbE2 switch)
- Redundant fans per each interconnect switch
- Redundant power to each interconnect switch
- Support for ProLiant network adapter teaming
- Redundant configurable community strings and SNMP trap manager hosts
- Redundant configurable syslog server, DNS server, and default gateways (GbE2 switch)

Security

Power-on password
Administrator's password
Integrated Lights-Out provides user authentication via directory services or 12 customizable user accounts
Integration Lights-Out supports SSH and SSL encryption
Integrated Lights-Out can be disabled via a Global Setting
Interconnect switch multilevel user names and passwords, management interface time out period setting, SSH*, SCP secure copy protocol*, port-based IEEE 802.1Q tagged VLANs, RADIUS user authentication and authorization*, and IP address restriction
*NOTE: CGESM or GbE2 Interconnect Switch only

Standard Features (Manageability)

Minimum Rack Requirements

Mounts in ProLiant, and Telco racks and Third Party racks that meet the following criteria:

- Compatible with 19-inch Standard EIA rail sets
- EIA rail-to-rail depth is 29 - 30"
- Cabinet depth must be at least 36-inch deep overall (Additional min. 3.5-inch clearance from rear RETMA rail to rear door, inclusive in the 36-inch overall depth)
- Ample room for top and bottom cable egress (approximately 8 square inches for full rack configuration with patch panel)
- Must be capable of supporting 1600 lb (for full rack configuration)
- Perforated front and rear doors to accommodate front-to-back cooling
- Must have 65% open perforation on server blade enclosure doors to support airflow requirements
- Optimized for use with the HP 10000 Series racks

NOTE: If using Compaq 7000 Series rack, Rack Extension Kit and High Air Flow Rack Door options are required.

Rack Airflow Requirements

- HP 10000 series racks provide enhanced airflow for maximum cooling, allowing racks to be fully loaded with servers and server blades using the latest server technologies.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section on the HP ProLiant BL30p server blade website: http://www.hp.com/servers/bl30p.

Service and Support

Three-year limited warranty, including hardware diagnostic support, pre-failure warranty (coverage of processors, memory and SCSI hard drives). The warranty is fully supported by HP Services and a worldwide network of resellers and service providers. In addition 90-day's getting started software telephone support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services.

NOTE: Server Blade Limited Warranty includes 3 year Parts, 1 year Labor, 1-year on-site support.
NOTE: Server Blade Enclosure and Interconnects Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMWare-based IT solutions helping to deliver high level of application availability. Response times

Standard Features (Manageability)

range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP has introduced a new building block approach which allows customers to purchase the right coverage at the right time whether purchasing an initial server blade plus enclosure or purchasing additional ProLiant server blades over time. HP will offer two sets of Care Pack services, one designed to support the server blade and one designed to support the enclosure.

HP Care Pack services for HP ProLiant Server Blades cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

HP Care Pack services for HP BladeSystem p-Class Server Blade Enclosure covers the enclosure including patch panels, HP supported Ethernet interconnects, power enclosure with power supplies and power distribution.

NOTE: For more information regarding the Blade service portfolio visit our worldwide web site on the internet at: http://h20219.www2.hp.com/services/cache/81725-0-0-225-121.html

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: http://www.hp.com/hps/carepack

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: http://www.hp.com/hps

NOTE: Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Models

HP ProLiant BL30p X3.2-2MB, 1GB (2P) 360329-B21	Processor(s)	Two (2) Intel Xeon 3.2-GHz standard (up to 2 supported)
	Cache Memory	2-MB Level 3 writeback per processor
	Memory	1024-MB (standard) to 4-GB (maximum) of PC2100 DDR SDRAM running at 266-MHz (1 x 1-GB); 2-way interleaved when an identical pair installed
	Network Adapter	Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One (1) 10/100T NIC (embedded) dedicated to iLO management
	Hard Drives	None ship standard
	Internal Storage	Up to 120-GB maximum (with optional hard drives)
	Optical Drive	None
	Form Factor	Plugs vertically into HP BladeSystem p-class blade sleeve. Blade sleeve supports 1 or 2 HP ProLiant BL30p server blades. Blade sleeve plugs vertically into HP BladeSystem p-Class Enhanced Server Blade Enclosure.

ProLiant BL30p X3.2-1MB, 1GB (2P) 368271-B21	Processor(s)	Two (2) Intel Xeon 3.2-GHz standard (up to 2 supported)
	Cache Memory	1-MB Level 3 writeback per processor
	Memory	1024-MB (standard) to 4-GB (maximum) of PC2100 DDR SDRAM running at 266-MHz (1 x 1-GB); 2-way interleaved when an identical pair installed
	Network Adapter	Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One (1) 10/100T NIC (embedded) dedicated to iLO management
	Hard Drives	None ship standard
	Internal Storage	Up to 120-GB maximum (with optional hard drives)
	Optical Drive	None
	Form Factor	Plugs vertically into HP BladeSystem p-class blade sleeve. Blade sleeve supports 1 or 2 HP ProLiant BL30p server blades. Blade sleeve plugs vertically into HP BladeSystem p-Class Enhanced Server Blade Enclosure.

ProLiant BL30p X3.06/533MHz-512KB, 1GB (2P) 354566-B21	Processor(s)	Two (2) Intel Xeon 3.06-GHz standard (up to 2 supported)
	Cache Memory	512-KB Level 2 writeback per processor
	Memory	1024-MB (standard) to 4-GB (maximum) of PC2100 DDR SDRAM running at 266MHz (1 x 1-GB), 2-way interleaved when an identical pair installed
	Network Adapter	Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One (1) 10/100T NIC (embedded) dedicated to iLO management
	Hard Drives	None ship standard
	Internal Storage	Up to 120-GB maximum (with optional hard drives) 2 x 60-GB
	Optical Drive	None
	Form Factor	Plugs vertically into HP BladeSystem p-class blade sleeve. Blade sleeve supports 1 or 2 HP ProLiant BL30p server blades. Blade sleeve plugs vertically into HP BladeSystem p-Class Enhanced Server Blade Enclosure.

Models

ProLiant BL30p X3.06/533MHz-512KB, 1GB (1P) 354050-B21	Processor(s)	One (1) Intel Xeon 3.06-GHz standard (up to 2 supported)
	Cache Memory	512-KB Level 2 writeback per processor
	Memory	1024-MB (standard) to 4-GB (maximum) of PC2100 DDR SDRAM running at 266-MHz (1 x 1-GB), 2-way interleaved when an identical pair installed
	Network Adapter	Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One (1) 10/100T NIC (embedded) dedicated to iLO management
	Hard Drives	None ship standard
	Internal Storage	Up to 120-GB maximum (with optional hard drives)
	Optical Drive	None
	Form Factor	Plugs vertically into HP BladeSystem p-class blade sleeve. Blade sleeve supports 1 or 2 HP ProLiant BL30p server blades. Blade sleeve plugs vertically into ProLiant BL p-Class Enhanced Server Blade Enclosure.

ProLiant 3.2-GHz BL30p Server Blade Multi-Pack 368272-B21 NOTE: Multi-pack contains 8 HP ProLiant BL30p server blades, 4 HP ProLiant BL30p server blade sleeves and 8 licenses for Rapid Deployment Pack.	Processor(s)	Each blade is configured with Two (2) Intel Xeon 3.2-GHz standard (up to 2 supported)
	Cache Memory	2-MB Level 3 writeback per processor
	Memory	1024-MB (standard) to 4-GB (maximum) of PC2100 DDR SDRAM running at 266-MHz (1 x 1-GB), 2-way interleaved when identical pair installed
	Network Adapter	Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One (1) 10/100T NIC (embedded) dedicated to iLO management
	Hard Drives	None ship standard
	Internal Storage	Up to 120-GB maximum (with optional hard drives) 2 x 60-GB

ProLiant 3.06-GHz BL30p Server Blade Multi-Pack 354051-B21 NOTE: Multi-pack contains 8 HP ProLiant BL30p server blades, 4 HP ProLiant BL30p server blade sleeves and 8 licenses for Rapid Deployment Pack.	Processor(s)	Each blade is configured with Two (2) Intel Xeon 3.06-GHz standard (up to 2 supported)
	Cache Memory	512-KB Level 2 writeback per processor
	Memory	1024-MB (standard) to 4-GB (maximum) of PC2100 DDR SDRAM running at 266-MHz (1 x 1-GB), 2-way interleaved when identical pair installed
	Network Adapter	Two (2) NC7781 PCI-X Gigabit NICs (embedded) with WOL and PXE One (1) 10/100T NIC (embedded) dedicated to iLO management
	Hard Drives	None ship standard
	Internal Storage	Up to 120-GB maximum (with optional hard drives) 2 x 60-GB

Configuration Information - Factory Integrated Models (North America only)

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.
NOTE: HP does not allow factory integration of options into standard models listed above.
Configure-to-order servers must start with a CTO Chassis.
NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.

Step 1: Base Server Blade Configuration

Model	HP ProLiant BL30p Configurable Model (North America)	367243-405

Configurable Model ships with:
- Two embedded NC7781 PCI-X Gigabit NICs plus one 10/100T NIC for iLO
- Integrated Lights-Out (iLO) Management with Advanced Pack features

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted)

Processor	Intel Xeon 3.06GHz/512-KB cache Processor Kit (option)	354053-L21
	NOTE: If 2 processors are desired, select one 354053-L21 and one 354053-B21	
	Intel Xeon 3.2GHz/533-1M cache Processor Kit (option)	368273-L21
	NOTE: If 2 processors are desired, select one 368273-L21 and one 368273-B21	
	Intel Xeon 3.2GHz/533-2M cache Processor Kit (option)	364306-L21
	NOTE: If 2 processors are desired, select one 364306-L21 and one 364306-B21	

Memory	NOTE: Two-way interleaving memory is enabled when an identical pair of DIMMs is installed.	
	For 1GB Total Memory choose A or B:	
	A) 2 x 512 MB PC2100 DDR SDRAM DIMMs	300679-B21
	B) 1 x 1GB PC2100 DDR SDRAM DIMM	287497-B21
	For 2GB Total Memory choose two:	
	1 x 1GB PC2100 DDR SDRAM DIMM	287497-B21
	For 4GB Total Memory:	
	2 x 2048MB PC2100 DDR SDRAM DIMM 2x2048	300682-B21

Step 3: Choose Additional Options for Factory Integration

Hard Drive	ATA Hard Drive Kit for ProLiant BL35p and ProLiant BL30p, 2.5" parallel ATA drive, 60GB, 5400 rpm	354052-B21
Fibre Channel Option	Dual-Port Fibre Channel Adapter (2-Gb) Kit for HP ProLiant BL30p or HP ProLiant BL35p server blades	354054-B21
	NOTE: For additional options, including HP BladeSystem p-Class blade sleeve, enhanced server blade enclosure, interconnect options and power subsystem options, please refer to the "Options" section below.	

Options

NOTE: Some options may not be factory integratable. Please contact your local sales representative for additional information.

Unique Options	ATA Hard Drive Kit for ProLiant BL35p and ProLiant BL30p, 2.5" parallel ATA drive, 60GB, 5400 rpm (option)	354052-B21
	HP BladeSystem p-Class Blade Sleeve Kit (option)	354101-B21
	NOTE: Each blade sleeve supports one or two HP ProLiant BL30p/HP ProLiant BL35p server blades.	

ProLiant BL30p/BL35p Dual-Port Fibre Channel Adapter	Emulex-based Dual Port Fibre Channel Adapter (2-Gb) Kit (option) NOTE: Supports the HP ProLiant 25p/30p/35p/45p Server Blades	394588-B21
	Dual-Port Fibre Channel Adapter (2-Gb) Kit (option) for HP ProLiant BL30p or HP ProLiant BL35p server blades* NOTE: This Fibre-Channel adapter is Qlogic-based *NOTE: When using this adapter, Patch Panel 2, CGESM, or a GbE2 Interconnect Switch Kit (with Storage Connectivity Kit) must be used to provide pass through of the Fibre Channel signals.	354054-B21

ProLiant Essentials Value Pack Software	ProLiant Essentials Vulnerability and Patch Management Pack, 1-Server + 10 Desktop Bundle License	389941-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License	371645-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, 10-Server License	372029-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Flexible-Quantity License	371646-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Tracking License for New Servers	371647-B21
	ProLiant Essentials Vulnerability and Patch Management Pack, Tracking License for Installed servers	378372-B21
	ProLiant Essentials Server Migration Pack, 25 - Server License	391674-B21
	ProLiant Essentials Server Migration Pack, 50 - Server License	391675-B21
	ProLiant Essentials Server Migration Pack, 100 - Server License	391676-B12
	ProLiant Essentials Server Migration Pack, 10 - Server License NOTE: This license allows 10 servers to be migrated from a physical server to 10 virtual machines. Or this license can be used to migrate 10 virtual machines from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.	390739-B21
	ProLiant Essentials Server Migration Pack, Single-Server License	375345-B21
	ProLiant Essentials Server Migration Pack, Flexible-Quantity License	375346-B21
	ProLiant Essentials Server Migration Pack, Tracking license	375347-B21
	ProLiant Essentials Virtual Machine Management Pack, SINGLE LIC IP CCAO-WGR	372214-B21
	ProLiant Essentials Virtual Machine Management Pack, FLEX LIC IP CCAO-WGR	372215-B21
	ProLiant Essentials Virtual Machine Management Pack, TRACKING LIC IP CCAO-WGR	372216-B21
	ProLiant Essentials Performance Management Pack, Single-Server License NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.	306696-B21

Options

ProLiant Essentials Performance Management Pack, 10-Server License	374055-B21
NOTE: For use with up to 10 servers. Contains 10 licenses with one unique license activation key and documentation.	
ProLiant Essentials Performance Management Pack, Flexible-Quantity License	306697-B21
NOTE: For use with multiple servers. This part number can be used to purchase multiple licenses with a single activation key. The quantity ordered of this part number will be the quantity of licenses included in the kit in the form of a corresponding activation key. Use the same key to activate all licenses in the actual quantity ordered. For a given order, one kit will be delivered with activation key, and documentation.	
ProLiant Essentials Performance Management Pack, Tracking license	306698-B21
NOTE: For use with signed and implemented Activation Key Agreements only. Purchase of this part number entitles the customer to deploy additional licenses of the product under the terms of the existing Activation Key Agreement.	
NOTE: Nothing is delivered in conjunction with the purchase of this part number. Visit http://h18004.www1.hp.com/products/servers/proliantessentials/license/akalic.html for more information on Activation Key Agreements.	
Rapid Deployment Pack, 10 User, V1.x	269817-B21
Rapid Deployment Pack, 10 User, V1.x (Japan)	269817-291
NOTE: The above license allows 10 servers to be managed and deployed via the Deployment Server.	
NOTE: Not necessary if you purchase the HP ProLiant BL30p Multi-Pack (354051-B21) or server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B22.	
NOTE: Rapid Deployment pack is now available in a Linux Edition for Linux-only environments.	
Rapid Deployment Pack, 1 User, V1.x	267196-B21
Rapid Deployment Pack, 1 User, V1.x (Japan)	267196-291
NOTE: The above license allows 1 server to be managed and deployed via the Deployment Server.	
NOTE: Not necessary if you purchase the HP ProLiant BL30p Multi-Pack (354051-B21) or server blade enclosure with 8 Rapid Deployment Pack licenses 281404-B22.	
NOTE: Rapid Deployment pack is now available in a Linux Edition for Linux-only environments.	
Flexible Quantity License Kit	302127-B21
License-Only - for use with a Master License Agreement	302128-B21
ProLiant Essentials Intelligent Networking Pack, Single Server License	372906-B21
NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.	
ProLiant Essentials Intelligent Networking Pack, Flexible License	372950-B21
NOTE: For use with multiple servers. This part number can be used to purchase multiple licenses with a single activation key. The quantity ordered for this part number will be the quantity of licenses included in the kit in the form of a corresponding activation key. Use the same key to activate all licenses in the actual quantity ordered. For a given order, one kit will be delivered with the activation key, and documentation.	
ProLiant Essentials Intelligent Networking Pack, Tracking License	372951-B21
NOTE: For use with signed and implemented Activation Key Agreements only. Purchase of this part number entitles the customer to deploy additional licenses of the product under the terms of the existing Activation Key Agreement.	
NOTE: Nothing is delivered in conjunction with the purchase of this part number. Visit http://h18004.www1.hp.com/products/servers/proliantessentials/license/akalic.html for more information on Activation Key Agreements.	

Options

	ProLiant Essentials Workload Management Pack (Featuring Resource Partitioning Manager version 2.0)	303284-B21
	NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://hp.com/servers/proliantessentials.	
	NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to URL http://hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.	
Processor	Intel Xeon 3.06-GHz / 512-KB cache Processor Kit (option)	354053-B21
	NOTE: There is no option kit offered for the HP ProLiant BL30p server blade with Intel Xeon 3.2GHz processor because all models ship with two processors installed.	
Memory (SDRAM DIMMs)	4096-MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 2-GB)	300682-B21
	2048MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 1 GB)	300680-B21
	2048 MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 2048 MB)	301044-B21
	1024-MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 1-GB)	287497-B21
	NOTE: This DIMM option is an identical match to the DIMM installed on the HP ProLiant BL30p server blade base model and therefore provides 2-way interleaving when installed on a base model HP ProLiant BL30p server blade.	
	1024-MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 512-MB)	300679-B21
HP BladeSystem p-Class Enhanced Server Blade Enclosures	HP BladeSystem p-Class Enhanced Server Blade Enclosure with the HP BladeSystem Management Suite **NOTE:** Includes an HP BladeSystem p-Class Enhanced Server Blade Enclosure, a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP), Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM).	380625-B22
	HP BladeSystem Management Suite (Software Licenses Only) **NOTE:** Adds 8 licenses to ProLiant BL p-Class Server Blade Enclosure with the HP BladeSystem Management Suite ,P/N 380625-B22 (above) for a total of 16 for a fully populated enclosure of BL30p blades. Includes a single copy of Systems Insight Manager (SIM) and 8 licenses for each of the following products: Rapid Deployment Pack (RDP), Performance Management Pack (PMP) and the Vulnerability and Patch Management Pack (VPM).	389403-B21
	HP BladeSystem p-Class Enhanced Server Blade Enclosure (includes enhanced backplane components)	243564-B22
	HP BladeSystem p-Class Enhanced Server Blade Enclosure with eight (8) ProLiant Essentials Rapid Deployment Pack Licenses (includes enhanced backplane components) **NOTE:** HP BladeSystem p-Class enhanced server blade enclosures are required to support HP ProLiant BL30p server blades.	281404-B22
	HP BladeSystem p-Class Server Blade Enclosure Upgrade Kit (option) **NOTE:** Server Blade Enclosure Upgrade Kit (354100-B21) contains enhanced backplane components and enables a field upgrade of a blade enclosure to support HP ProLiant BL30p server blades series and provide a single, physical iLO port for the enclosure.	354100-B21

Options

HP BladeSystem p-Class Interconnects	ProLiant BL p-Class Patch Panel 2 Kit with Fibre Channel pass-through (pair)	306465-B21
	NOTE: Only one interconnect kit required per server blade enclosure.	
	ProLiant BL p-Class Patch Panel (pair)	230766-B21
	NOTE: Only one interconnect kit required per server blade enclosure.	
	ProLiant BL p-Class C-GbE2 Interconnect Kit (with pair of GbE2 Interconnect Switches and two QuadT2 Interconnect Modules)	283192-B21
	NOTE: Only one interconnect kit required per server blade enclosure.	
	ProLiant BL p-Class F-GbE2 Interconnect Kit (with pair of GbE2 Interconnect Switches and two QuadSX Interconnect Modules)	283193-B21
	NOTE: Only one interconnect kit required per server blade enclosure.	
	Cisco Gigabit Ethernet Switch Module for HP BladeSystem p-Class Interconnect Kit Base Unit only	378926-B21
	NOTE: Two CGESM interconnect kits required per server blade enclosure.	
	Cisco Gigabit Ethernet Switch Module for HP BladeSystem p-Class Interconnect Kit Base Unit (populated with two RJ-45 10/100/1000 T/TX/T Small Form Factor Pluggable (SFP) Modules	378927-B21
	NOTE: Two CGESM interconnect kits required per server blade enclosure.	
	Cisco RJ-45 10/100/1000 T/TX/T SFP Module	378928-B21
	Cisco Fiber SX SFP Module	378929-B21
	ProLiant BL p-Class Storage Connectivity Kit (with pair of OctalFC Interconnect Modules and two Fibre Channel signal conditioning cards)	321745-B21
	NOTE: Required for HP ProLiant BL30p and HP ProLiant BL35p Fibre Channel signal pass through when using the CGESM or GbE2 Interconnect Switch. NOTE: Only one Storage Connectivity Kit required per each GbE2 Interconnect Kit. NOTE: Only one Storage Connectivity Kit required for (2) CGESM Interconnect Kit	

HP BladeSystem p-Class Power Options	NOTE: Use p-Class sizing tool to help determine power configuration: http://h30099.www3.hp.com/configurator/powercalcs.asp	
	Single Phase Power Enclosure with 4 power supplies (NA/JPN) (Single Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-001
	Single Phase Power Enclosure with 4 power supplies (Int'l) (Single Phase Power Enclosure holds a maximum of 4 power supplies; no need to order additional power supplies with this option kit)	239162-421
	3 Phase Power Enclosure with 6 power supplies (NA/JPN) (3 Phase Power Enclosure holds a maximum of 6 power supplies; no need to order additional power supplies with this option kit)	230769-001
	3 Phase Power Enclosure with 6 power supplies (Int'l) (3 Phase Power Enclosure holds a maximum of 6 power supplies; no need to order additional power supplies with this option kit)	230769-421
	Single Phase Power Enclosure (empty) (NA/JPN) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-001
	Single Phase Power Enclosure (empty) (Int'l) (Holds up to 4 power supplies; power supplies are not included in this kit)	231710-421
	3 Phase Power Enclosure (empty) (NA/JPN) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-001

Options

	3 Phase Power Enclosure (empty) (Int'l) (Holds up to 6 power supplies; power supplies are not included in this kit)	231709-421
	Single Power Supply	239161-B21
	1U Power Enclosure with six power supplies	378284-B21
	1U Power Enclosure with two power supplies	380314-B21
	Single 1U power supply	380312-B21
	Facility DC Power Connection	240563-B21

HP BladeSystem p-Class Power Distribution (only required with 3U power enclosures)	HP BladeSystem p-Class Scalable Bus Bar	240560-B21
	HP BladeSystem p-Class Mini Bus Bar	240559-B21
	Dual Power Input Kit for Mini Bus Bar	364565-B21
	HP BladeSystem p-Class Power Bus Box	240562-B21
	HP Modular Distribution Unit 40 Amp (NA/JPN)	252663-D75
	HP Modular Distribution Unit 40 Amp (Int'l)	252663-B34
	HP Modular Distribution Unit 32 Amp (Int'l)	252663-B33
	HP Modular Distribution Unit 24 Amp (NA/JPN)	252663-D74

NOTE: The Modular Distribution Unit Kits excludes the extension bars as they are not required with the HP BladeSystem p-class 1U power enclosure.

HP BladeSystem Power Extension Kit — 381686-B21
NOTE: This kit is specifically for HP BladeSystem p-Class customers who want to upgrade their standard server blade enclosures to enhanced server blade enclosures and would like to install an additional, redundant 3U power enclosure above the server blade enclosures rather than below them. The option kit consists of two extension cable assemblies - one for each side (A and B).

SAN Switches	HP McDATA 4Gb SAN Switch	A8001A
	Brocade 4GB SAN Switch, Base	A7533A
	Brocade 4GB SAN Switch, full fabric	A7534A
	Brocade 4GB SAN Switch, power pack	A7535A

HP BladeSystem p-Class Other Options	HP BladeSystem p-Class Diagnostic Station	230743-B21
	HP BladeSystem p-Class Server Enclosure Shipping Bracket Option Kit NOTE: Used to secure one server blade enclosure in a rack when moving.	293121-B21
	HP BladeSystem p-Class Power Enclosure Shipping Bracket Option Kit NOTE: Used to secure one power enclosure in a rack when moving.	365044-B21
	HP BladeSystem p-Class Bus Bar Telco Rack Kit	245249-B21
	HP BladeSystem p-Class Enclosure Telco Rack Kit	266076-B21

Tape Libraries	HP StorageWorks MSL6000 Tape Library **Ultrium 960 technology**	
	MSL6030, 1 drive, 30 slots, Ultrium 960	AD606A
	MSL6030, 2 drive, 30 slots, Ultrium 960	AD607A
	MSL6030, 1 drive, 30 slots, Ultrium 960, with embedded FC router	AD608A

Options

MSL6030, 2 drive, 30 slots, Ultrium 960, with embedded FC router	AD609A
MSL6060, 2 drive, 60 slots, Ultrium 960	AD610A
MSL6060, 2 drive, 60 slots, Ultrium 960, with embedded FC router	AD611A
SDLT 600 technology	
MSL6026, 1 drive, 26 slots, SDLT 600	AD582A
MSL6026, 2 drive, 26 slots, SDLT 600	AD583A
MSL6026, 1 drive, 26 slots, SDLT 600, with embedded FC router	AD584A
MSL6026, 2 drive, 26 slots, SDLT 600, with embedded FC router	AD585A
MSL6052, 2 drive, 52 slots, SDLT 600	AD587A
MSL6052, 2 drive, 52 slots, SDLT 600, with embedded FC router	AD588A
Ultrium 460 technology	
MSL6030, 1 drive, 30 slots, Ultrium 460	AD598A
MSL6030, 2 drive, 30 slots, Ultrium 460	AD599A
MSL6030, 1 drive, 30 slots, Ultrium 460, with embedded FC router	AD600A
MSL6030, 2 drive, 30 slots, Ultrium 460, with embedded FC router	AD601A
MSL6060, 2 drive, 60 slot Ultrium 460	AD603A
MSL6060, 2 drive, 60 slot Ultrium 460, with embedded FC router	AD604A

NOTE: Please reference the MSL6000 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

HP StorageWorks MSL5026S2 Tape Library

MSL5026S2, 1 drive, 26 slots, SDLT 320, RM	293472-B22
MSL5026S2, 2 drive, 26 slots, SDLT 320, RM	293472-B23
MSL5026S2, 1 drive, 26 slots, SDLT 320, RM with embedded FC router	293472-B24
MSL5026S2, 2 drive, 26 slots, SDLT 320, RM with embedded FC router	293472-B25

NOTE: Please reference the MSL5026S2 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

HP StorageWorks MSL5052S2 Tape Library

MSL5052S2, 2 drive, 52 slots, SDLT 320, RM	293474-B21
MSL5052S2, 2 drive, 52 slots, SDLT 320, RM with embedded FC router	293474-B24

NOTE: Please reference the MSL5052S2 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http:/www.hp.com/go/ebs

HP StorageWorks MSL5060 Tape Library

MSL5060, 2 drive, 60 slots, Ultrium 230, RM	301899-B23
MSL5060, 2 drive, 60 slots, Ultrium 230, RM with embedded FC router	301900-B21

NOTE: Please reference the MSL5060 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

HP StorageWorks ESL E-Series Tape Libraries

ESL Extended 712e Tape Library, 0 drive, 712 LTO slots	AA934B

Options

ESL Extended 630e Tape Library, 0 drive, 630 SDLT slots	AA935B
ESL Extended 322e Tape Library, 0 drive, 322 LTO slots	AA939B
ESL Extended 286e Tape Library, 0 drive, 286 SDLT slots	AA940B
ESL E-Series Ultrium 960 drive kit	AD595A
ESL E Ultrium 460 drive kit	AA937A
ESL E-Series Ultrium 460-FC drive kit	AA941A
ESL E SDLT 320 drive kit	AA936A
ESL E e2400-FC 2G Interface Controller	AA928A

NOTE: Please reference the ESL E-Series Tape Libraries QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution. Reference current compatibility information at http://www.hp.com/go/ebs

HP StorageWorks EML E-Series Tape Libraries

EML103e Tape Library, 0 drive, 103 LTO slots	AD560A
EML 245e Tape Library, 0 drive, 245 LTO slots	AD561A

NOTE: Please reference the EML E-Series Tape Libraries QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution. Reference current compatibility information at http://www.hp.com/go/ebs

HP StorageWorks Virtual Library Systems

HP 6105 Virtual Library System	AD728A
HP 6510 Virtual Library System	AD729A

NOTE: Please reference the Virtual Library Systems Tape Libraries QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution. Reference current compatibility information at http://www.hp.com/go/ebs

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Magneto-Optical Jukeboxes

HP StorageWorks 9.1 GB Mid-range Optical Jukeboxes

300mx, 2 drive, 32 slot jukebox	C1150M
600mx, 4 drive, 64 slot jukebox	C1160M
700mx, 2 drive, 76 slot jukebox	C1170M

NOTE: Please reference the Magneto-Optical Jukebox data sheets at http://www.hp.com/go/optical for additional information needed to create a complete solution

HP StorageWorks 9.1 GB High-end Optical Jukeboxes

1200mx, 4 drive, up to 128 slots	C1104M
1200mx, 6 drive, up to 128 slots	C1105M
2200mx, 4 drive, up to 238 slots	C1111M
2200mx, 6 drive, up to 238 slots	C1107M
2200mx, 10 drive, up to 238 slots	C1110M

Options

NOTE: Please see the HP StorageWorks Magneto-Optical Products data sheet for a complete listing of available jukeboxes at:
http://www.hp.com/products1/storage/products/archivalprod/brochures/MO_family_pb.pdf
NOTE: Please reference the Magneto-Optical Jukebox data sheets at http://www.hp.com/go/optical for additional information needed to create a complete solution

HP StorageWorks Ultra Density Optical Storage

1000ux, 2 drive, 32 slot jukebox	AA965A
1900ux, 4 drive, 64 slot jukebox	AA966A
1900ux, 4 mixed drive, 64 slot jukebox	AA968A
2300ux, 2 drive, 76 slot jukebox	AA967A
3800ux, 4 drive, 128 slot jukebox	AA969A
3800ux, 6 drive, 128 slot jukebox	AA970A
7100ux, 4 drive, 238 slot jukebox	AA973A
7100ux, 6 drive, 238 slot jukebox	AA971A
7100ux, 10 drive, 238 slot jukebox	AA972A
7100ux, 6 mixed drive, 238 slot jukebox	AA974A

NOTE: Please see the HP StorageWorks Ultra Density Optical Jukeboxes QuickSpecs for a complete listing of available jukeboxes at:
http://h18006.www1.hp.com/products/quickspecs/11944_div/11944_div.html

NOTE: Please reference the Ultra Density Optical Jukebox QuickSpecs at http://www.hp.com/go/optical for additional information needed to create a complete solution

HP StorageWorks Modular Smart Array 1000	HP StorageWorks Modular Smart Array 1000	201723-B22
	Modular Smart Array 1000 Controller	218231-B22
	Modular Smart Array Fibre Channel I/O Module	218960-B21
	Modular Smart Array hub 2/3	286763-B21
	HP StorageWorks Modular Smart Array 1000	201723-B22

NOTE: Please see the StorageWorks Modular Smart Array 1000 QuickSpecs for additional options and configuration information at:
http://h18000.www1.hp.com/products/quickspecs/11033_na/11033_na.HTML
(North America)
http://h18000.www1.hp.com/products/quickspecs/11033_div/11033_div.HTML
(Worldwide)

Options

Cluster Options	ProLiant Cluster Kit with OpenView Storage Mirroring	364025-B21
	ProLiant Cluster HA/F200 for the Entry Level SAN	364026-B21
	ProLiant Cluster HA/F200 for the Entry Level SAN	364026-291

NOTE: For additional information regarding the ProLiant Cluster for HA/F100, HA/F200 for Modular Smart Array 1000 please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11035_na/11035_na.html (North America)
http://h18000.www1.hp.com/products/quickspecs/11035_div/11035_div.html (Worldwide)

	ProLiant Cluster Starter kit	364023-B21

NOTE: For additional information regarding the HP ProLiant Cluster for ProLiant Cluster HA/F500 for Enterprise Virtual Array please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/11055_na/11055_na.html (North America)
http://h18000.www1.hp.com/products/quickspecs/11055_div/11055_div.html (Worldwide)

NOTE: For additional information regarding the HP ProLiant Cluster for HA/F500 please see the following QuickSpecs at:
http://h18000.www1.hp.com/products/quickspecs/10232_na/10232_na.html (North America)
http://h18000.www1.hp.com/products/quickspecs/10232_div/10232_div.html (Worldwide)

USB Options	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B
	USB Optical Scroll Mouse (Carbonite)	DD441B
	256MB HP Drive Key II (USB 2.0)	PH657A

HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack - Unassembled	358254-B21

Rack Options for Rack 5000 Series (Graphite Metallic)	Stabilizer kit for 5642 Rack (Graphite Carbon) **NOTE:** The stabilizing kit is used to prevent rack from tipping over	374493-B21
	Baying Kit for 5642 Rack (Graphite Carbon) **NOTE:** The baying kit is used to join two or more HP5642 racks.	374499-B21

QuickSpecs

Options

Rack 10000 Series (Graphite Metallic)	Rack, HP Infrastructure 42U (HV)	379005-001
	Rack, HP Infrastructure 42U (LV)	379006-001
	HP Rack 10842 (42U) - Pallet	257415-B21

NOTE: Server Blade Enclosures must be field integrated into the 10842 racks. Factory integration of Server Blade Enclosures into the 10842 is not supported.

HP Rack 10842 (42U) - Shock Pallet	257415-B22

NOTE: Server Blade Enclosures must be field integrated into the 10842 racks. Factory integration of Server Blade Enclosures into the 10842 is not supported.

HP S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
HP Rack 10647 (47U) Cabinet - Pallet	245160-B21
HP Rack 10647 (47U) Cabinet - Crated	245160-B23
HP Rack 10642 (42U) Cabinet - Pallet	245161-B21
HP Rack 10642 (42U) Cabinet - Shock Pallet	245161-B22
HP Rack 10642 (42U) Cabinet - Crated	245161-B23
HP Rack 10636 (36U) Cabinet - Pallet	245162-B21
HP Rack 10636 (36U) Cabinet - Shock Pallet	245162-B22
HP Rack 10636 (36U) Cabinet - Crate	245162-B23
HP Rack 10622 (22U) Cabinet - Pallet	245163-B21
HP Rack 10622 (22U) Cabinet - Shock Pallet	245163-B22
HP Rack 10622 (22U) Cabinet - Crated	245163-B23

NOTE: -B21 (pallet) used to ship empty racks shipped on a truck
-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)
-B23 (crated) used for air shipments of empty racks
Not all HP equipment is qualified to be shipped in the Rack 10000 series.

NOTE: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML (North America)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html

Options

Rack Options for HP Rack 10000 Series	HP Rack Plinth Kit (Carbon)	251960-B21
	HP Rack Light Kit (Neon)	361589-B21
	42U Side Panel – Graphite Metallic	246099-B21
	36U Side Panel – Graphite Metallic	246102-B21
	47U Side Panel – Graphite Metallic	255486-B21

NOTE: For additional information regarding Rack Options, please see the following URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html.

TFT7210R Rack Mounted 17" Monitor	348373-B21
TFT5600 Rack Keyboard Monitor	221546-xx1
1U Rack Keyboard & Drawer (Carbon)	257054-xx1

Country Code Key (for TFT5600 RKM Rack Keyboard Monitor (PN 221546-xx1)and 1U Rack Keyboard & Drawer (Carbon)(P/N 257-54-xx1))

XX = 00	US	XX = 09	Norway
XX = 03	UK	XX = 10	Sweden/Finland
XX = 04	Germany	XX = 11	Switzerland
XX = 05	France	XX = 13	Portugal
XX = 06	Italy	XX = 18	Belgium
XX = 07	Spain	XX = 29	Japan
XX = 08	Denmark	XX = B3	International

NOTE: For additional information regarding Rack Options, please see the following URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html

NOTE: For a complete list of Monitors please view the following URL: http://h18004.www1.hp.com/products/monitors/

HP KVM Switch Options	IP Console Switch Box (KVM/IP), 1 x 1 x 16	262585-B21
	IP Console Switch Box (KVM/IP), 3 x 1 x 16	262586-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21
	Interface adapter - USB 1.0 (single pack)	336047-B21
	CAT5e Cable 3', 4 pack	263474-B21
	CAT5e Cable 6', 8 pack	263474-B22
	CAT5e Cable 12', 8 pack	263474-B23
	CAT5e Cable 20', 4 pack	263474-B24
	CAT5e Cable 40', 1 pack	263474-B25

NOTE: For additional information regarding HP KVM Switches and options, please see the following URL: http://h18004.www1.hp.com/products/servers/proliantstorage/rack-options/list.html#console

Options

Service and Support Offerings (HP Care Pack Services)

Hardware Services On-site Service

Next Business Day On-Site Service, 5-Day x9-Hour Coverage, 3 Years, Electronic	UD186E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UD187E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UD188E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UD189E

NOTE: The HP Care Pack service part numbers below for HP BladeSystem p-Class server blade enclosure covers the enclosure including patch panels, HP supported Ethernet interconnects, power enclosure with power supplies and power distribution.

Hardware Services On-site Service

4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	HC031E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HC032E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	HC033E

NOTE: The HP Care Pack service part numbers below covers the HP BladeSystem Brocade and McData SAN Switches.

Hardware Services On-site Service

Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	UC007E
4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UC008E
4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UC009E
6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UC023E

Installation & Start-up Services

HP Installation & Startup Service for HP BladeSystem Infrastructure - provides for an integrated hardware and software implementation that includes remote service planning, onsite deployment of hardware and software, installation verification testing and customer orientation. Hardware deployment covers the installation of a single BladeSystem enclosure that include server blades (up to 16), Ethernet network interconnect, and power options. Software deployment covers the installation and configuration of HP Systems Insight Manager (SIM), HP Rapid Deployment Pack (RDP), and deploy up to two operating system editions of either Windows or Linux, using scripted operating system installation software	UC905E
ProLiant BL p-Class Blade Server Hardware Installation, Electronic	UA219E
ProLiant BL p-Class Enclosure and Server Blade Hardware Installation, Electronic	U4971E
Provides for the Installation and Start-up of ProLiant Essentials Rapid Deployment Pack on a Customer supplied server designated as a Deployment Server. Includes the deployment of a single server. This new server will be deployed using either one of the pre-configured scripts or an image. In addition, the service will provide for the capture and storage of the configuration of the newly deployed server and orientation on product usage. To be delivered during standard office ours, standard office days. Electronic.	U5683E
Provides for the Installation and Start-up of Rapid Deployment Pack Implementation of Rapid Deployment Pack (Basic) (Electronic)	UA042E

Options

HP ProLiant Essentials Vulnerability and Patch Management Pack Installation and Startup Service. Service coverage: onsite installation of the Vulnerability and Patch Management (VPM) software on a customer designated server, configuration of the VPM software to acquire security patches, enabling the VPM software to scan up to five (5) systems, applying the security patches to the designated servers, generating a report from VPM that shows the vulnerability assessment results, and providing customer with an orientation to the software.	UC929E
Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA041E
Provides for the Installation and Start-up of System Insight Manager (Electronic)	UA040E

NOTE: For more information, customer/resellers can contact
http://www.hp.com/hps/carepack/services/

Software Operating Environment Care Packs

Microsoft Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic)	U8169E
Red Hat Software Operating Environment Software Telephone 9x5 - 10 incident (Electronic)	U3402E
SUSE Software Operating Environment Software Telephone 9x5 - 3 incident (Electronic)	U9615E
ProLiant Essentials Operating Environment, - 5 Day, 8x5,1 year, 3 incident (Electronic)	U8222E

NOTE: For more information, customer/resellers can contact
http://www.hp.com/hps/carepack/services/

QuickSpecs

Memory

HP ProLiant BL30p Server Blade (all models)
Standard Memory
1024-MB PC2100 MHz Registered DDR SDRAM DIMM installed (1 x 1-GB SDRAM DIMM)

Standard Memory Replaced with Optional Memory
Up to 4096-MB of DDR SDRAM DIMM memory is available with the removal of standard memory and the installation of optional SDRAM DDR DIMM memory expansion kits.

Memory		Slot	
		1	2
Standard	1024 MB	1024 MB	
Optional	1024 MB	512 KB	512 KB
Optional	2048 MB	1024 MB	1024 MB
Maximum	4096 MB	2048 MB	2048 MB

Following are memory options available from HP:

- 4096-MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 2 GB)   300682-B21
- 2048MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 1 GB)   300680-B21
- 2048 MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 2048 MB)   301044-B21
- 1024-MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (1 x 1 GB)   287497-B21
- 1024-MB of Advanced ECC PC2100 DDR SDRAM DIMM Memory Kit (2 x 512 MB)   257974-B21

Technical Specifications

HP BladeSystem p-Class Enhanced Server Blade Enclosure	Dimensions	Height	10.5 in (26.67 cm)	
		Width	17.60 in (44.70 cm)	
		Depth	28.86 in (73.30 cm)	
	Input Specifications	Rated input voltage	-43 VDC to -53 VDC	Nominal -48 VDC
		Rated input current	125 A at -48 VDC	
		Rated input Power	6000 W	
	Individual Server Blade Bay Ratings	Rated input voltage	-43 VDC to -53 VDC	Nominal -48 VDC
		Rated input current	14.6 A at -48 VDC	
		Rated input Power	700 W	
	Temperature Range	Operating	50° to 95° F (10° to 35° C)	
		Non-Operating	-22° to 140° F (-30° to 60° C)	
	Relative Humidity (non-condensing)	Operating	20% to 80%	
		Non-Operating	5% to 95%	
	Wet Bulb Temperature	Operating	82.4° F (28° C)	
		Non-Operating	101.7° F (38.7° C)	

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BLp-Class RJ-45 Patch Panel 2 with Fiber Channel pass through	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Capability	IEEE 802.2, 802.3, 802.3u	
	Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
		10 Base-T (full-duplex)	20 Mbps
		100 Base-TX (half-duplex)	100 Mbps
		100 Base-TX (full-duplex)	200 Mbps
		1000 Base-TX (full-duplex)	1000 Mbps
	Fiber Channel SAN Connector	Velio VC1070 re-timer	Auto-rate negotiate between 2G and 1G
		Network	32 RJ-45 in the back.
		Fiber Channel SAN	16 Pluggable SFP optical cages in the front
	Cable Support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft (100 m)
		100 Base-TX	Category 5 UTP (2 pair); up to 328 ft/100 m
		1000 Base-TX	Category 5E (4 pair); up to 328 ft (100 m)
		Fiber Channel	SFP optical cable
	EMI	FCC Class A	
		ICES-003 Class A	
		AS/NZS 3548 Class A	
		VCCI Class A	

Technical Specifications

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BL p-Class RJ-45 Patch Panel			
	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Capability	IEEE 802.2, 802.3, 802.3u	
	Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
		10 Base-T (full-duplex)	20 Mbps
		100 Base-TX (half-duplex)	100 Mbps
		100 Base-TX (full-duplex)	200 Mbps
		1000 Base-TX (full-duplex)	1000 Mbps
	Connector	Network	16 RJ-45 in the back
	Cable Support	10 Base-TX	Categories 3, 4, or 5 UTP (2 or 4 pair); up to 328 ft (100 m)
		100 Base-TX	Category 5 UTP (2 pair); up to 328 ft (100 m)
		1000 Base-TX	Category 5E (4 pair); up to 328 ft (100 m)
	Power Requirements	200 mA at + 5V DC; 500 mA at -48V	
	Temperature Range	Operating	50° to 95° F (10° to 35° C)
		Non-operating	-22° to 140° F (-30° to 60° C)
	Relative Humidity (non-condensing)	Operating	20% to 80%
		Non-operating	5% to 95%
	Wet Bulb Temperature	Operating	82.4° F (28° C)
		Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BL p-Class GbE Interconnect Switch			
	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)
	Weight	11.5 lb/5.2 kg per interconnect switch	
	Performance	9.6 Gbps external port bandwidth per server blade enclosure (full duplex)	
		Forwarding rate 0.15 million pps per 10/100 port, 1.5 million pps per gigabit port, (64-byte packets)	
		Non-blocking, full-wire speed for all connections	
		Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
	Forwarding Mode	Store and forward	
	MAC Addresses	8,191 per interconnect switch; MAC address based filtering and MAC address packet priority configuring	

Technical Specifications

Forwarding Table Age Time	Maximum age: 1 to 1,000,000 seconds; default: 300 seconds	
Memory	32MB Main, 6MB flash and 16MB packet buffer per interconnect switch	
Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3z (F-GbE only), 802.1D, 802.1p, 802.3ac, 802.3ad (Static), and 802.1Q	
	SNMP v1 (RFC 1157) and RMON v1 (RFC 1757) groups 1, 2, 3, and 9	
	MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface Group MIB (RFC 2863), Ethernet MIB (RFC 1643), 802.1Q Extended Bridge MIB (RFC 2674), Entity MIB (RFC 2037), SNMP Trap Convention (RFC 1215), Bridge Trap (RFC 1493), Remote Monitoring Traps (RFC 1757), and HP Enterprise Switch MIBs and Environmental Traps	
	IGMP v1 (RFC 1112), IGMP v2 (RFC 2236), SNTP (RFC 1361), Telnet (RFC 854), TFTP client (RFC 783), BootP client, (RFC 2132), DHCP client, (RFC 2131) and ZModem,	

Network Transfer Rate		
	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half and full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps

Connector	12 RJ-45, 2 DB-9 (C-GbE Interconnect Kit) 4 LC fiber, 8 RJ-45, 2 DB-9 (F-GbE Interconnect Kit)	
EMI	FCC Class A	
	ICES-003 Class A	
	AS/NZS 3548 Class A	
	VCCI Class A	
Safety	UL/CUL Listed Accessory	
	CE	
Power Requirements	-48VDC: 1050 mA, 50 W maximum (per interconnect switch)	

Temperature R range		
	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (-30° to 60° C)

Relative Humidity (non-condensing)		
	Operating	20% to 80%
	Non-operating	5% to 95%

Wet Bulb Temperature		
	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for ProLiant BL p-Class GbE2	**Dimensions**	Height	10.405 in (26.43 cm)
		Width	1.535 in (3.899 cm)
		Depth	27.697 in (70.35 cm)

Technical Specifications

BL p-Class GbE2
Interconnect Switch

Weight	12.0 lb/5.4 kg per interconnect switch
Performance	24 Gbps External port bandwidth per server blade enclosure (full duplex)
	Forwarding rate 1.5 million pps per gigabit port (64-byte packets)
	Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support
Forwarding Mode	Store and forward
MAC Addresses	2,048 per interconnect switch
Forwarding Table Age Time	Maximum age: 1 to 65535 seconds; default: 300 seconds
Memory	128MB Main, 32MB flash and 2MB packet buffer per interconnect switch
Compliance	IEEE 802.3, 802.3u, 802.3ab, 802.3x, 802.3z (F-GbE2 only), 802.1D, 802.3ac, 802.3ad (Static), and 802.1Q
	SNMP v1 (RFC 1157), MIB-II (RFC 1213), Bridge MIB (RFC 1493), Interface Group MIB (RFC 2863), Ethernet MIB (RFC 1643), 802.1Q Extended Bridge MIB , Entity MIB (RFC 2037), RADIUS Authentication MIB, 802.3-2002 MIB, SNMP Trap Convention (RFC 1215), Bridge Trap (RFC 1493), Remote Monitoring Traps (RFC 1757) and HP Enterprise Switch MIBs and Environmental Traps
	RADIUS (RFC 2138), Telnet (RFC 854), TFTP client (RFC 783), SSH v1.5, SCP v1.5, NTP v2 (RFC 1119), BootP client (RFC 2132), and XModem

Network Transfer Rate		
	10 Base-T (half-duplex)	10 Mbps
	10 Base-T (full-duplex)	20 Mbps
	100 Base-TX (half-duplex)	100 Mbps
	100 Base-TX (full-duplex)	200 Mbps
	1000 Base-TX (half and full-duplex)	2000 Mbps
	1000 Base-SX (full-duplex)	2000 Mbps

Connector	12 RJ-45, 2 DB-9 (C-GbE2 Interconnect Kit)
	8 LC fiber, 4 RJ-45, 2 DB-9 (F-GbE2 Interconnect Kit)
EMI	FCC Class A
	ICES-003 Class A
	AS/NZS 3548 Class A
	VCCI Class A
Safety	UL/CUL Listed Accessory
	CE
Power Requirements	48VDC: 2040 mA, 98 W maximum (per interconnect switch without Storage Connectivity Kit)
	48VDC: 2355 mA, 113 W maximum (per interconnect switch with Storage Connectivity Kit)

Temperature Range	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (-30° to 60° C)
Relative Humidity (non-condensing)	Operating	20% to 80%
	Non-operating	5% to 95%
Wet Bulb Temperature	Operating	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)

Technical Specifications

NOTE: Operating temperature has an altitude derating of 34° F/1° C per 1,000 ft/304.8 m. No direct sunlight. Upper operating limit is 10,000 ft/3,048 m or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft/9,144 m or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F/45° C. Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for CGESM Interconnect Switch	Dimensions	Height	10.405 in (26.43 cm)
		Width	1.6 in (4.06 cm)
		Depth	28 in (71.12 cm)
	Weight	11.5 lb/5.2 kg per interconnect switch	
	Performance	28 Gbps Maximum Forwarding Bandwidth. 38.7mpps Maximum Forwarding Rate (64 Byte Packets)	
		9018Bytes Jumbo Frames MTU	
		Non-blocking architecture. Wire Speed Performance on all ports	
		Auto-MDI/MDIX, auto-negotiation and auto-sensing with full-duplex support	
	Forwarding Mode	Store and forward	
	MAC Addresses	8000 MAC/physical address Table Size	
	Memory	128MB DRAM Memory. 16MB Flash Memory	
	Compliance	IEEE 802.1s, IEEE 802.1w, IEEE 802.1x, IEEE 802.3ad, IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and, IEEE 802.1D Spanning-Tree Protocol, IEEE 802.1p CoS Prioritization, IEEE 802.1Q VLAN, IEEE 802.3 10BASE-T specification, IEEE 802.3u 100BASE-TX specification, IEEE 802.3ab 1000BASE-T specification, IEEE 802.3z 1000BASE-X specification, RMON I and II standards, SNMPv1, SNMPv2c, and SNMPv3 (RFC1493) , CISCO-CDP-MIB, CISCO-CLUSTER-MIB, CISCO-CONFIG-MAN-MIB, CISCO-ENTITY-FRU-CONTROL-MIB, CISCO-ENVMON-MIB, CISCO-FLASH-MIB, CISCO-FTP-CLIENT-MIB, CISCO-IGMP-FILTER-MIB, CISCO-IMAGE-MIB, CISCO IP-STAT-MIB, CISCO-MAC-NOTIFICATION-MIB, CISCO-MEMORY-POOL-MIB, CISCO-PAGP-MIB, CISCO-PING-MIB, CISCO-PROCESS-MIB, CISCO-RTTMON-MIB, CISCO-STP-EXTENSIONS-MIB, CISCO-SYSLOG-MIB, CISCO-TCP-MIB, CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB, CISCO-VLAN-MEMBERSHIP-MIB, CISCO-VTP-MIB, ENTITY-MIB, ETHERLIKE-MIB, IF-MIB (in and out counters for VLANs are not supported), IGMP-MIB, OLD-CISCO-CHASSIS-MIB, OLD-CISCO-FLASH-MIB, OLD-CISCO-INTERFACES-MIB, OLD-CISCO-IP-MIB, OLD-CISCO-SYS-MIB, OLD-CISCO-TCP-MIB, OLD-CISCO-TS-MIB, RFC1213-MIB (per the agent capabilities specified in the, CISCO-RFC1213-CAPABILITY.my), RFC1253-MIB, RMON-MIB, RMON2-MIB, SNMP-FRAMEWORK-MIB, SNMP-MPD-MIB, SNMP-NOTIFICATION-MIB, SNMP-TARGET-MIB, SNMPv2-MIB, TCP-MIB, UDP-MIB 1000BASE-T ports, 1000BASE-X (SFP), 1000BASE-SX	
	Network Transfer Rate	10 Base-T (half-duplex)	10 Mbps
		10 Base-T (full-duplex)	20 Mbps
		100 Base-TX (half-duplex)	100 Mbps
		100 Base-TX (full-duplex)	200 Mbps
		1000 Base-TX (half and full-duplex)	2000 Mbps
		1000 Base-SX (full-duplex)	2000 Mbps
	Connector	4 SFP, 2 RJ-45 10/100/1000 T/TX/T, 1 DB-9	

Technical Specifications

EMI		FCC Part 15 Class A	
		EN 55022: 1998 (CISPR22)	
		EN 55024: 1998 (CISPR24)	
		CNS 13438 Class A MIC	
		CD	
		MIC	
		AS/NZS 3548 Class A CE	
		VCCI Class A	
Safety		UL to UL 60950, Third Edition	
		C-UL to CAN/CSA C22.2 No. 60950-00, Third Edition	
		TUV/GS to EN 60950:2000	
		CB to IEC 60950 with all country deviations	
		NOM to NOM-019-SCFI	
		CE Marking	
Power Requirements		-48VDC: 1050 mA, 125 W maximum (per interconnect switch)	
Temperature Range	Operating	50 to 95° F (10 to 35° C)	
	Non-operating	-22 to 140° F (-30 to 60° C)	
Relative Humidity (non-condensing)	Operating	20% to 85%	
	Non-operating	5% to 95%	
Wet Bulb Temperature	Operating	82.4° F (28° C)	
	Non-operating	101.7° F (38.7° C)	

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for 3U HP BladeSystem p-Class Power Enclosures (North America/Japan)

			Single-Phase Model	3-Phase Model
Dimensions		Height	5.25 in (13.34 cm)	5.25 in (13.34 cm)
		Width	27.15 in (68.96 cm)	27.15 in (68.96 cm)
		Depth	17.60 in (44.7 cm)	17.60 in (44.7 cm)
Weights		No Hot-Plug Power Supplies	47.5 lb (21.55 kg)	47.5 lb (21.55 kg)
		All Hot-Plug Power Supplies	99.5 lb (45.13 kg)	125.5 lb (56.93 kg)
Input Requirements		Rated input voltage	200 VAC to 240 VAC	200 VAC to 240 VAC line to line
		Rated input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
		Rated input current per side	24A	24A per phase
		Rated input power per side	5760 W	9976 W
		Power cord	1 NEMA L6-30P per side	1 NEMA L15-30 per side

Technical Specifications

Output Voltage Specifications			
	Rated output voltage	-48.8 VDC to -54 VDC	-48.8 VDC to -54 VDC
	Rated output current	99A	170A
	Rated output power	4298 W	8310 W
	Nominal power	4158 W at 208 VAC	7202 W at 208 VAC
Ambient Temperature Range (See NOTE)	Operating	50° to 95° F (10° to 35° C)	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)	-22° to 140° F (-30° to 60° C)
Relative humidity, non-condensing (See NOTE)	Operating	20% to 80%	20% to 80%
	Non-operating	5% to 95%	5% to 95%
Wet Bulb Temperature	Operating	82.4° F (28° C)	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for 3U HP BladeSystem p-Class Power Enclosures (International)

		Single-Phase Model	3-Phase Model
Dimensions	Height	5.25 in (13.34 cm)	5.25 in (13.34 cm)
	Width	27.15 in (68.96 cm)	27.15 in (68.96 cm)
	Depth	17.60 in (44.7 cm)	17.60 in (44.7 cm)
Weights	No Hot-Plug Power Supplies	47.5 lb (21.55 kg)	47.5 lb (21.55 kg)
	All Hot-Plug Power Supplies	99.5 lb (45.13 kg)	125.5 lb (56.93 kg)
Input Requirements	Rated input voltage	200 VAC to 240 VAC	6.25 A at -48 VDC 200 VAC to 240 VAC line to neutral
	Rated input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
	Rated input current per side	24A	20A per phase
	Rated input power per side	5760 W	10,552 W
	Power cord	1 IEC 309 3-pin, 32A per side	1 IEC 309 5-pin, 32A per side
Output Voltage Specifications	Rated output voltage	-48.8 VDC to -54 VDC	-48.8 VDC to -54 VDC
	Rated output current	99A	180A
	Rated output power	4798 W	8790 W
	Nominal power	4598 W at 208 VAC	8790 W at 230 VAC L-N
Ambient Temperature Range (See NOTE)	Operating	50° to 95° F (10° to 35° C)	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)	-22° to 140° F (-30° to 60° C)

Technical Specifications

Relative humidity, non-condensing (See NOTE)	Operating	20% to 80%	20% to 80%
	Non-operating	5% to 95%	5% to 95%
Wet Bulb Temperature	Operating	82.4° F (28° C)	82.4° F (28° C)
	Non-operating	101.7° F (38.7° C)	101.7° F (38.7° C)

NOTE: Operating temperature has an altitude derating of 34° F (1° C) per 1,000 ft (304.8 m). No direct sunlight. Upper operating limit is 10,000 ft (3,048 m) or 70Kpa/10.1 psia. Upper non-operating limit is 30,000 ft (9,144 m) or 30.3 KPa/4.4 psia. Storage maximum humidity of 95% is based on a maximum temperature of 113° F (45° C). Altitude maximum for storage is 70 KPa.

Operating and Performance Specifications for HP BladeSystem p-Class Power Distribution Devices		Power Bus Box	Mini Bus Bar	Scalable Bus Bar
	Power Enclosures or facility DC feeds Supported (3U each)	1	1 or 2	1 or 2
	Server blade enclosures supported (6U each)	1	up to 3	up to 5
	Total rack height of supported enclosures	9U	24U	36U
	Dimensions			
	Height	5.1 in (12.95 cm)	19.45 in (49.40 cm)	48.57 in (123.37 cm)
	Width	3.6 in (9.14 cm) each	19.74 in (50.14 cm)	19.74 in (50.14 cm)
	Depth	3.25 in (8.26 cm)	2.2 in (5.59 cm)	2.2 in (5.59 cm)
	Weight	3.62 lb (1.64 kg)	13.2 lb (5.9 kg)	26 lb (11.79 kg)
	Rated Operating Voltage	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC	-43.2 VDC to -54 VDC
	Max Total Power Supported	3000 W	9000 W	15000 W
	Total Max Input Current At Minimum Voltage	69.44 A at -43.2VDC	208.32 A at -43.2 VDC	347.2 A at -43.2 VDC (equivalent of 175A per feed)
	Total Max Input Current At Nominal Voltage	62.5 A at -48VDC	187.5 A at -48 VDC	312.5 A at -48 VDC (equivalent of 175A per feed)
	Max Current Per Power Feed	70A	70A	210A
	Max Local Ambient Temperature	149° F (65° C)	149° F (65° C)	149° F (65° C)

NOTE: All systems support redundant A & B feeds. Scalable bus bar supports dual A and dual B feeds.

Technical Specifications

Operating and Performance Specifications for Facility DC

Voltage		Nominal input voltage	-48 VDC
		Operating voltage range	-48VDC ± 10% or -43.2 VDC to -52.8 VDC
		Max Input voltage slew rate	0.5V/uS
		Redundant feed voltages* (A & B)	*A and B feeds must differ by no more than 5VDC during steady state operation
		Ripple/Noise	480 mV PARD**
		Overshoot	Must remain within regulation limits on all feeds during startup or shutdown
		Voltage transients	Must not exceed -60 VDC
Current		Max steady state input current	62.5A per server blade enclosure installed at -48VDC
		Max steady state current per feed/total	
		Power bus boxes	70 A/70A
		Mini bus bars	210 A/210A
		Scalable bus bars	210 A/350A or equivalent of 175A per feed*
In-rush current		Must support up to 2X the maximum operating current per server blade enclosure (125 A) for up to 1.0 mS	
Input over-current		Customer provided fusing for facility DC feeds that protects the system from catastrophic over-current within 20 uS. Fuse should sustain all in-rush and operating currents.	
Max Input Current Slew Rate		1A/uS	
Max Rated Power		3000W per server blade enclosure	
Connections and Cables		HP provided facility DC cable connection kit:	

* The facility DC connection kit supports the connection of up to four -48VDC, RETURN pairs and ground

The power cable assemblies consist of 1/0AWG, color-coded, flexible cable rated at 105° C, terminated with bus mating connectors at one end and unterminated at the other end. The cable length provided enables the customer to route to a fuse panel within or adjacent to the rack.

NOTE: *All systems support redundant A and B feeds. Scalable bus bars support dual A and dual B feeds.

** Periodic and random noise (PARD). Maximum allowable peak-to-peak ripple and noise (as measured at the load on any output channel). The ripple and noise is measured over a 20 Hz to 100 MHz frequency band. A resistive load (non-electronic) is used for this measurement. Each output is by-passed to return by a 10uF tantalum capacitor with an ESR less than 100 milli-Ohms in parallel with a 0.47 uF ceramic capacitor, at the point of load. The load cable is 12 feet of twisted wire capable of carrying the current. The printed wiring board assembly is installed in its enclosure for this measurement, or the measurement leads are properly shielded with Earth grounds applied to the insert.

Technical Specifications